



## April 2015 Briefing Summary

### E-Cigarettes: Updating the Science and Policy

Briefing Materials are available at: <http://uwphi.pophealth.wisc.edu/programs/health-policy/ebhpp/events/index.htm>

#### Speaker Contact Information

---

**Dorothy Hatsukami**

Associate Director of Cancer Prevention and Control for the Masonic Cancer Center, Forster Family Chair in Cancer Prevention, Professor of Psychiatry, University of Minnesota  
[hatsu001@umn.edu](mailto:hatsu001@umn.edu)

**Karmen Hanson**

Health Program Manager, National Conference of State Legislatures  
[karmen.hanson@ncsl.org](mailto:karmen.hanson@ncsl.org)

**Stephen Hecht**

Wallin Land Grant Professor of Cancer Prevention, Dept. of Laboratory Medicine and Pathology, University of Minnesota [hecht002@umn.edu](mailto:hecht002@umn.edu)

*Facilitator:* Rep. **Jessie Rodriguez**, WI 21<sup>st</sup> Assembly Dist.

[rep.rodriguez@legis.wisconsin.gov](mailto:rep.rodriguez@legis.wisconsin.gov)

#### E-cigarette use, health impacts, and potential policy responses

---

**Dorothy Hatsukami** from the University of Minnesota described how e-cigarettes work, current patterns of use, and how those patterns might be affected by policy.

- “ENDS” (electronic nicotine delivery systems) is perhaps a better way to conceptualize the issue than “e-cigarettes,” because these products increasingly do not resemble cigarettes.
- There are now over 400 brands of these systems, many of which are owned by Big Tobacco.
- They have evolved from small, pre-filled cartridges to tank systems and high-power, customizable devices, including e-hookahs and water pipe inserts.
- The current market is a “wild west,” with no product standards, no minimum or maximum allowable levels of nicotine or other constituents, no warning labels or advertising restrictions, few other regulations, and thousands of flavors available.
- **Toxicity**
  - The toxicity of products is variable across and even within brands. E-cigarettes primarily contain nicotine, propylene glycol, glycerin, water, and flavorants, but may also contain some unknown contaminants or other constituents with unknown effects.
  - Known toxicants are at levels that are 9 to 450 times lower than in conventional cigarettes. However, there may still be acute and long-term effects even at these levels.
  - Flavors and additives in liquids can contain several toxins that may damage lungs and other organs, including additives that add a buttery, cherry, or cinnamon flavor.
  - The devices themselves come with their own risks, especially the heating coils that convert the liquid into vapor; these coils can emit toxic heavy metals.
  - Nicotine delivery levels also vary greatly across and within brands, and as a result of a user’s use patterns. Some products claim not to contain nicotine when they actually do, and some claim that they do contain it when they actually do not.
    - ❖ *Regulatory options:* require disclosure of all ingredients, mandate quality control, establish product standards, and provide for accurate labeling information.
- **Vaping in public places** is a concern.
  - It creates not only 2<sup>nd</sup>-hand, but also 3<sup>rd</sup>-hand nicotine exposure (traces are left on furniture in a room even after a user leaves).



Robert M. La Follette  
School of Public Affairs  
UNIVERSITY OF WISCONSIN-MADISON



University of Wisconsin  
Population Health Institute  
SCHOOL OF MEDICINE AND PUBLIC HEALTH



WISCONSIN LEGISLATIVE COUNCIL

- It also normalizes smoking and serves as a social cue; when smokers see vaping, they crave cigarettes more.
  - ❖ *Regulatory options:* Ban or recommend abstinence in all or certain places.
- **Youth appeal, labeling, packaging, and distribution:**
  - Products come in 7700 flavors available on the internet. The two largest factors driving youth desire to experiment are curiosity and the appeal of flavors.
  - Packaging has high youth appeal and is very easy to open, with over 200 calls/month to poison control.
  - Most products lack warning labels, and marketing and advertising are so pervasive that youth exposure to e-cig ads on TV increased 250+% from 2011-13 alone.
  - 77% of minor test buyers in a recent study successfully received delivery. Products are now available at many large retail chains and can be easily obtained by minors over the internet—
    - ❖ *Regulatory options:* Crack down on e-cig health claims, prohibit marketing to kids and promotion of dual use, require childproof packaging, restrict flavors that appeal to youth (e.g. cookies, ice cream, cotton candy, etc.), or apply tobacco cigarette regulations to e-cigs as well.
- **Uptake and tobacco cessation:**
  - Overall adult and youth e-cig uptake has recently more than doubled yearly—a bigger concern for children because nicotine changes the morphology of developing brains. However, usage is increasing much more for current and former smokers than for never-smokers. Some people report that they have taken up e-cig use because it is cheaper than smoking.
  - Whether e-cigs are gateway drugs for children is debatable. A recent study shows a reversal of the long-term decrease in overall youth tobacco use, but the new increase was smaller than the increase in e-cig use.
  - Few studies have examined e-cigs as smoking cessation products, although preliminary results suggest that they may function similarly well to nicotine patches.
    - ❖ *Regulatory options:* Require promotion of e-cigs for cessation to await better evidence or promote educational campaigns aimed at youth and/or adults.
- The American Association of Cancer Research and the American Society of Clinical Oncology emphasize that our main goal should be to reduce combustible tobacco use and that we should be open to e-cigs having a role in these efforts, but that they will not be successful without proper regulations in place.

**Stephen Hecht** from the University of Minnesota discussed his research on toxins and carcinogens in e-cigarettes, the state of research in the field overall, comparisons to tobacco products, and implications for the future.

- Many carcinogens and potentially harmful compounds have been identified in e-cig vapor. They are generally present at far lower levels than they are in cigarette smoke. The carcinogen formaldehyde is a possible exception, as its levels in e-cigs can increase drastically at high voltages.
- Measuring constituent chemicals is extremely hard in e-cigs compared to in tobacco cigarettes because of broad product variability. Dr. Hecht's study was one of the first to look at biomarkers (measures of bodily excretion) in e-cig users, the most reliable way to measure chemicals in e-cigarettes.
- For most chemicals, e-cig users' levels were much closer to those of non-smokers than those of smokers, but their levels of oxidants and inflammation were at the same levels as those in smokers.
- More research should be conducted on these effects, as well as on formaldehyde effects, for which there is currently no good urinary biomarker.
- In sum, e-cigs are, on balance, likely less harmful than tobacco cigarettes. However, allowing e-cig use in public indoor spaces could begin to reverse the progress that has been made in reducing smoking.

## **Current and future trends in state and federal e-cig regulation**

---

**Karmen Hanson** from the NCSL discussed the current state of e-cigarette regulation, both in other states and at the federal level, and described growing trends in e-cigarette regulation.

- There currently is essentially no federal regulation of e-cigs. A proposed FDA rule, expected to be promulgated very soon, will change this, but we do not yet know how.
- The past year has seen a great deal of increased regulation by states, but this may slow down as states await federal action that may be more effective or render some state measures obsolete.
- 42 states prohibit e-cig sales to minors. 3 states have added e-cigs to their total indoor smoking bans, while another 15 have included them in more limited adult bans.
- MN and NC specifically tax e-cigs, and 10 more states have had similar legislation introduced this year. Some taxes are levied on the liquid by volume, others on the wholesale value of all ENDS products.
- 24 states have passed some e-cig safety measures. 5 require child-resistant liquid nicotine packaging.