2nd and 3rd Hand Marijuana Smoke and Vapor: It’s All Around Us!

Phillip S. Gardiner, Dr. P. H.
Senior Program Officer, Tobacco Related Disease Research Program (TRDRP)
University of California Office of the President and Co-Chair African American Tobacco Control Leadership Council (AATCLC)

Health Effects of Secondhand Smoke from Marijuana

The 2019 North American Cannabis Summit
Los Angeles, California
January 28, 2019
The Evolving “Smoking” Landscape

- Hookah pens aerosolizing flavored liquids, with and without nicotine
- Heat-not-burn products that produce an aerosol, but no fire or smoke
- Colorfully packaged, flavored little cigars and cigarillos, both regular and electronic
- Butane derived THC that you can dab
- Liquid THC, which you can aerosolize.

- All of these products will have a unique 2nd and 3rd hand smoke/vapor Chemical footprint
Co-Mingling; Dual and Poly Use:

- **Blunts**
  - Hollowed out Cigars filled with marijuana

- **Caviar**
  - Adding Crack cocaine or crystal meth to Blunts

- **Roll Your Own**
  - Spliffs

- **Mix Your Own**
  - Cocktails (assorted e-liquids, flavors and nicotine)
  - Compounding 2nd and 3rd hand smoke and vapor
Blunts: Hollowed-out Cigars Filled with Marijuana
Spliffs
Nearly 4000 High School Students in Connecticut completed an anonymous survey—27% who have used both marijuana and e-cigarettes reported using e-cigarette aerosolizers to vaporize cannabis including hash oil, and wax THC. (Morean et al., 2015)
Dried plant smoke:
similar chemicals in varied proportions

Sample comparisons of components of tobacco and marijuana secondhand smoke

<table>
<thead>
<tr>
<th>Component</th>
<th>Tobacco (mg/cig)</th>
<th>Marijuana (mg/cig)</th>
</tr>
</thead>
<tbody>
<tr>
<td>naphthalene</td>
<td>24.3 ± 1.8</td>
<td>49.7 ± 2.5*</td>
</tr>
<tr>
<td>formaldehyde</td>
<td>1101 ± 47</td>
<td>2087 ± 152*</td>
</tr>
<tr>
<td>acetaldehyde</td>
<td>61.7 ± 2.0</td>
<td>54.0 ± 3.7*</td>
</tr>
<tr>
<td>nicotine</td>
<td>4.77 ± 0.26</td>
<td>0.065 ± 0.018*</td>
</tr>
<tr>
<td>ammonia</td>
<td>55.6 ± 32</td>
<td>14270 ± 472*</td>
</tr>
<tr>
<td>HCN (µg/cig)</td>
<td>83.8 ± 7.8</td>
<td>685 ± 29*</td>
</tr>
<tr>
<td>pyridine</td>
<td>265 ± 11</td>
<td>307 ± 14*</td>
</tr>
<tr>
<td>benzene</td>
<td>290 ± 11</td>
<td>341 ± 12*</td>
</tr>
<tr>
<td>toluene</td>
<td>516 ± 20</td>
<td>704 ± 29*</td>
</tr>
<tr>
<td>styrene</td>
<td>105 ± 10</td>
<td>162 ± 10*</td>
</tr>
</tbody>
</table>

From Moir et al., 2008. Subset of 65 components analyzed under standard tobacco smoking conditions.
Pod Switching

- Pod switching; People using multiple substances (Can you say Triangulum); [https://www.youtube.com/watch?v=S7oSm5zuTc](https://www.youtube.com/watch?v=S7oSm5zuTc)

- The JUUL Explosion will have its corresponding 2nd and 3rd hand aerosol explosion; even if you aren’t a young adult using JUUL, you still probably have been exposed
Dabbing
Dabbing

- Dabbing: Inhaling the vapors from a concentrated form of marijuana made by an extracting THC using butane gas.

- Dabs, also known as butane hash oil (BHO) — "bladder," "honeycomb" or "earwax"

- Dabbing will leave its own unique chemical footprint
3 in 1: Herb, Liquid or Wax
Our Presenters

- Matthew Springer, Professor of Medicine, University of California, San Francisco
Our Presenters

- Suzaynn Schick, Ph.D., Associate Professor of Medicine, University of California, San Francisco
Our Presenters

- Cynthia Hallett, M.P.H., President and CEO, Americans for Nonsmokers Rights
Our Moderator

- Phillip Gardiner, Dr.P.H., Senior Program Officer, Tobacco-Related Disease Research Program