Assessing the impact of Ploom TECH use on indoor air quality (IAQ)

ISoNTECH
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Source reference for the IAQ data in this presentation

Indoor air quality (IAQ) evaluation of a Novel Tobacco Vapor (NTV) product

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Regulatory Toxicology and Pharmacology 92 (2018) 278–294
Consumer needs are evolving

Consumers are increasingly interested in experiences and products that address a broadening spectrum of personal and social needs.
Combining risk-reduction potential & product acceptance

To fulfil the Harm Reduction equation

Risk-Reduction Potential \( \times \) Product Acceptance = Harm Reduction
The risk cliff concept

Potential risk-reduction in Tobacco Vapor (T-Vapor) products

Temperature may be an indicator of risk

Charcoal Heated Tobacco vapor is in the lower temperature range, while E-cigarettes are in the higher temperature range.
How Ploom TECH works

Tobacco-infused vapor
Vapor chemistry

99% reduction in measured harmful & potentially harmful constituents*

*Based on the comparison of 9 harmful constituents, recommended for reduction by the World Health Organization in cigarette smoke, measured in the smoke of a standard reference cigarette (3R4F) versus the vapor from Ploom Tech. Use of this product does not mean it is necessarily safer than smoking regular cigarettes.

Data show a measured yield minus background (air blank) control. Measurements <LOD or <LOQ plotted as 0.5 LOD and 0.5 LOQ respectively.

As presented at ISoNTech 2017
Exhaled breath analysis

Constituent levels in exhaled breath (μg per exhalation)

Participants refrained from smoking cigarettes from the time they woke up in the morning until the end of the exhalation measurements. Ten exhalation samples were collected for each single analysis (n=23). After 10 exhalations, the panel person rinsed their mouth with drinking water to prevent chemical contaminations before sampling of the next 10 exhalations.
IAQ experimental set up

(a) Ariel view; (b) & (c) side views
# Experimental conditions

<table>
<thead>
<tr>
<th>Smoking-Permitted Application</th>
<th>Chamber floor area (m²)</th>
<th>Occupant density (persons per 100m²)</th>
<th>Floor area per person (m²/person)</th>
<th>Occupied persons at chamber area (persons)</th>
<th>Proportion of smokers in all the occupants at chamber area (−)</th>
<th>Calculated smokers at chamber area (persons)</th>
<th>Smokers in this study (persons)</th>
<th>Consumption rate of cigarettes or Ploom TECH (cigarettes/(h person) or Ploom TECH/(h person))</th>
<th>Puffs (puffs/(h person))</th>
<th>Total ventilation rate (m³/h)</th>
<th>Total ventilation rate per Ploom TECH product (m³/product)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dining room</strong></td>
<td>8</td>
<td>70</td>
<td>1.43</td>
<td>5.6</td>
<td>0.5</td>
<td>2.8</td>
<td>3</td>
<td>0.6</td>
<td>1</td>
<td>2</td>
<td>Unrestricted smoking style to be depended on each person</td>
</tr>
<tr>
<td><strong>Conference room</strong></td>
<td>8</td>
<td>50</td>
<td>2.0</td>
<td>4</td>
<td>0.2</td>
<td>0.8</td>
<td>1</td>
<td>1.1</td>
<td>2</td>
<td>4</td>
<td>*** Ploom TECH consumption rate of 1 was assumed to be 8 puffs which was the average puff number of a cigarette (Ministry of Health, Labour and Welfare in Japan, 2001).</td>
</tr>
<tr>
<td><strong>Smoking lounge</strong></td>
<td>8</td>
<td>70</td>
<td>1.43</td>
<td>5.6</td>
<td>1</td>
<td>5.6</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>


* only base ventilation (to simulate smoking-prohibited area).

** sum of base ventilation and extra ventilation (to simulate smoking-permitted area).

*** Ploom TECH consumption rate of 1 was assumed to be 8 puffs which was the average puff number of a cigarette (Ministry of Health, Labour and Welfare in Japan, 2001).
Minimal impact of Ploom TECH use on IAQ

*Smoking lounge*

Data show a measured yield minus background (air blank) control
Measurements <LOD or <LOQ plotted as 0.5 LOD and 0.5 LOQ respectively
Minimal impact of Ploom TECH use on IAQ

*Dining room*

Data show a measured yield minus background (air blank) control. Measurements <LOD or <LOQ plotted as 0.5 LOD and 0.5 LOQ respectively.
Minimal impact of Ploom TECH use on IAQ

Conference room

Data show a measured yield minus background (air blank) control. Measurements <LOD or <LOQ plotted as 0.5 LOD and 0.5 LOQ respectively.
Ploom TECH findings to date

Evidence for strong reduced-risk potential

Emission
- 99% reduction in harmful constituents*

Uptake
- Biomarker reductions similar to smoking abstinence

Effect
- Less impact compared to smoking & competitive HTP

Indoor Air Quality
- Minimal effect on Indoor Air Quality

*Based on the comparison of 9 harmful constituents, recommended for reduction by the World Health Organization in cigarette Smoke, measured in the smoke of a standard reference cigarette (3R4F) versus the vapor from Ploom Tech. Use of this product does not mean it is necessarily safer than smoking regular cigarettes.
Visit
www.jt-science.com

Basics and details of vaping category

Fundamental science

Scientific data on JT/JTI products