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## **Testimony in support of S.288** **An act relating to banning flavored tobacco products and e-liquids**

The **Vermont Chapter of the American Academy of Pediatrics**, representing over 200 Vermont Pediatricians, and the **Vermont Medical Society**, representing over 2,000 Vermont physicians, support banning flavored tobacco products and e-liquids.

### **Vermont Data**<sup>1</sup>

2019 Vermont YRBS data show that current use of electronic nicotine delivery system (ENDS) more than doubled from 2017 to 2019, with 26% of students reporting use within the last 30 days compared to 12% in 2017.

Results from a 2019 survey of 478 Vermont high school students<sup>2</sup>:

- Of the students who have used e-cigarettes in the last month, **more than 1/3** report that they use e-cigarette **within 15 minutes** of waking up – a marker of dependency
- Those using flavored e-cigarettes were asked what they would do if they could not get flavored e-cigarettes anymore: 43% would stop using e-cigarettes, 34% would switch to cigarettes, 23% would switch to unflavored e-cigarettes.

### **Health effects of nicotine**<sup>3</sup>

- The reward centers of the young brain are particularly vulnerable to the effects of nicotine. Those who are exposed to nicotine at a young age are more likely to become adult smokers.
- Studies support the connection between subjective symptoms of nicotine dependence and white matter structure and suggest that nicotine dependence over time can result in neuroplastic changes in a number of brain systems.
- Nicotine increases concentrations of dopamine, a neurotransmitter essential for boosting attention, reward-seeking behaviors, and the risk of various addictions, from gambling to drug use.
- Nicotine induces proliferation of vascular smooth muscle cells and the migration of cells into blood vessels. Nicotine also increases lipolysis, resulting in the release of free fatty acids; over time, these effects cause an acceleration of coronary and peripheral vascular disease as well as an increase in the risk of strokes.

## **Health effects of ENDS ingredients<sup>4</sup>**

- Flavors are “generally recognized as safe” for food but not inhalation.
- Researchers have identified concentrations of flavors in e-liquid products that exceed the “occupational exposure” limit recommended for these chemicals from the American Industrial Hygiene Association. When flavor chemicals are mixed, thousands of combinations are possible all with different toxicity potentials. The combination of these products can then react further in the airways after heating.
- Other products used in EVPs such as propylene glycol and vegetable glycerin are “generally recognized as safe” as food additives but are irritants when inhaled.
- Byproducts of heating e-liquid are also not well understood and have been shown to be irritants and sometimes carcinogens.

## **ENDS effects on the lungs<sup>5</sup>**

- Regular users of e-cigarettes are more likely to report symptoms of chronic bronchitis and more likely to have flares of their asthma if they have underlying asthma.
- Samples of sputum and washings from the airways of regular EVP users contain markers of airway destruction known to contribute to COPD in tobacco smokers<sup>6</sup>
- Decrease function of airway cilia resulting in poor airway defense.
- Acute illness with sudden onset of respiratory failure (EVALI)

## **National data<sup>7</sup>**

- Among high school students who use e-cigarettes, use of mint or menthol increased from 38% in 2018 to 57% in 2019 while use of fruit or candy flavors declined after Juul restricted sales of flavors other than mint, menthol and tobacco. Juul has now stopped selling mint flavor.
- Experts concerned that youth will move to menthol flavor

## **References**

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