

# Tank and refillable pod devices had **similar** estimated **nicotine flux during use.**

## Disposable pod and disposable devices had **similar** estimated **upper limit of nicotine flux.**

### Nicotine Flux by ENDS Device Type: Findings from Wave 5 of the VAPER Study

#### Background

Nicotine flux is the amount of nicotine emitted per second by an electronic nicotine delivery system (ENDS) device and could become a useful regulatory target. We analyzed data from a national survey to estimate and compare nicotine flux by device type.

#### Methods

- Sample included US adults (21+) who used ENDS 5+ days/week (n=1,289), with most (96%) being daily users
- The web-based survey was completed in Feb.-April 2023
- Nicotine flux was calculated by multiplying the device wattage, liquid nicotine concentration, and coefficients accounting for PG/VG's impact on flux
- The wattage of tank and refillable pod batteries during use was determined using photos of visual displays, aggregated wattage data from others' visual displays, self-reported data, and a wattage calculator
- The upper limit of wattage for disposable pod and disposable batteries was determined using multimeter measurements and website-reported data
- Nicotine concentration and PG/VG were determined using photos of liquids and self-reported data
- The Mann-Whitney U test was used to compare flux and upper limit of flux between device types
- Median nicotine flux during use was reported for tanks and refillable pods, and the median of the nicotine flux upper limit was reported for disposable pods and disposables

#### Limitations

Sources and methods used to create the wattage variable varied by device type, which could introduce bias. Devices repeatedly represented in the sample by aggregated data could limit total variation and the distributions.

#### Results

##### Estimated flux during use (µg/s)

Device Type	Median	25 <sup>th</sup> %ile	75 <sup>th</sup> %ile
<b>Tanks (n=290)</b>	48	33	84
<b>Refillable pods (n=308)</b>	62	22	113

Differences were not statistically significant, p=0.42

##### Estimated upper limit of flux (µg/s)

Device Type	Median	25 <sup>th</sup> %ile	75 <sup>th</sup> %ile
<b>Disposables (n=521)</b>	151	138	151
<b>Disposable pods (n=170)</b>	142	88	174

Differences were not statistically significant, p=0.88

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Competing Interests: Dr. Eissenberg is a paid consultant in litigation against the tobacco industry and also the electronic cigarette industry and is named on one patent for a device that measures the puffing behavior of electronic cigarette users, on another patent application for a smartphone app that determines electronic cigarette device and liquid characteristics, and a third patent application for a smoking cessation intervention. Dr. Cohen is a paid consultant in litigation against a tobacco company.

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