

Transitions in Device and Liquid Characteristic Groupings Among U.S. Adults Who Use ENDS Frequently, Over 3 Timepoints

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Background

Electronic nicotine delivery system (ENDS) and liquid characteristics affect the exposure to nicotine and toxicants, and the behavior, of those who use them. This study explored whether adults who frequently use ENDS changed their most-used ENDS device/liquid grouping during years 2020 and 2021—and identified the device features and liquids that may be associated with such transitions.

Methods

- 379 U.S. adults (21+) who use ENDS frequently (5+ days/week) self-reported and uploaded photos of their most-used ENDS device and liquid during three waves of online surveys (May 2020–November 2021).
- Device-liquid grouping was defined by the device (i.e., disposable/refillable tank/refillable pod or cartridge/disposable pod or cartridge, adjustable/no adjustable settings) and liquid (i.e., nicotine salt/freebase) characteristics.
- Participants who used the same grouping across all three waves were classified as stable.

Nearly $\frac{1}{3}$ of those who used tanks during Wave 1 transitioned to other groupings during Waves 2 and/or 3.

ENDS regulation should focus on factors that **influence nicotine delivery**—such as **nicotine formulation and concentration**, along with **device power**.



Learn more about the Vaping and Patterns of E-Cigarette Use Research (VAPER) Study

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Results

- Tank (freebase, adjustable settings; 36.8%) was the most prevalent grouping during Wave (W) 1.
- From W1 to W3, the number of people using disposable devices (salt, no adjustable settings) increased 156.4% and the number of those using disposable pods/cartridges (salt, no adjustable settings) decreased 15.2%.
- In W2 and W3, compared to stable participants (n=95), those using tank (freebase, adjustable settings) in W1 and another grouping in W2 and/or W3 (n=45) reported significantly higher nicotine concentrations (mg/mL) (W2: 15.1 vs 5.5, $p < 0.001$; W3: 22.9 vs 5.6, $p < 0.001$) and lower device power (watt) (W2: 46.8 vs 58.7, $p = 0.02$; W3: 34.0 vs 57.2, $p < 0.001$).

Conclusions

- Over the 1.5-year period, the number of people using disposable devices (salt, no adjustable settings) grew rapidly and the number of those using disposable pods/cartridges (salt, no adjustable settings) decreased.
- Participants who transitioned from tank to other groupings were more likely to increase liquid nicotine concentration and reduce device power than those classified as stable.

Authors

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