



Center for Tobacco Control
Research and Education

TPMP Requirements Should Protect Youth and Priority Populations

TPSAC meeting, May 18, 2023

Lauren K. Lempert

UCSF TCORS

UCSF TCORS generally supports, but...

- Requirements are floor, not ceiling
- Can't be used to promote safety, quality, FDA endorsement
- Focus on protecting youth and priority populations

Nicotine labels must accurately reflect contents

Section 1120.90

- Nicotine concentrations on labels are often not accurate
- 91% of packs labeled “0 mg/mL” contain nicotine
- Some labeled “0 mg/mL” contained up to 23.9 mg/mL

SCIENCE AND PRACTICE

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REVIEW

A systematic review of refillable e-liquid nicotine content accuracy

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Youth don't understand nicotine strength

- Don't understand “mg/mL” or “% nicotine”
- Think mg/mL concentrations are stronger, more harmful
- Underestimate nicotine strength





Original Investigation

Adolescents and Young Adults Have Difficulty Understanding Nicotine Concentration Labels on Vaping Products Presented as mg/mL and Percent Nicotine

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Abstract

Introduction: E-cigarette e-liquid nicotine concentrations typically are labeled as mg/mL or percent nicotine. We examined whether these metrics accurately convey nicotine strength to young e-cigarette users and if youth can compare concentrations presented in mg/mL and percent nicotine.

Aims and Methods: Eight hundred and twenty-one adolescent and young adult e-cigarette users participated in the survey. Participants rated nicotine concentration strengths presented as mg/mL (0–60 mg/mL) and percent nicotine (0%–6%) from “no nicotine” to “very high nicotine.” Participants also viewed pairs of nicotine concentrations (eg, 18 mg/mL vs. 5%) and indicated which concentration was stronger or if the concentrations were equivalent.

Results: On average, participants correctly identified 5.92 (2.68) of 18 nicotine strengths, correctly identifying strengths labeled as mg/mL (3.47 [2.03]) more often than percent nicotine (2.45 [1.38], $p < .001$). Excluding nicotine-free, participants rated concentrations presented as mg/mL as stronger, more addictive, and more harmful than equivalent concentrations presented as percent nicotine. Participants seldom correctly identified that one concentration was stronger or that both were equivalent (758 [5.88] of 19 pairings), although they more often correctly identified the stronger concentration when it was presented in mg/mL (4.02 [SD = 3.01]) than in percent nicotine (2.53 [2.73], $p < .001$). The most consistent predictor of correct answers on these tasks was familiarity with using both products labeled as mg/mL and labeled as percent nicotine.

Conclusions: Young e-cigarette users had difficulty understanding nicotine concentrations labeled using the most common metrics, raising concerns about inadvertent exposure to high nicotine levels and suggesting that a more intuitive labeling approach is needed.

Implications: This study extends prior work showing that young e-cigarette users often are uncertain whether the e-liquids they use contain nicotine by demonstrating that adolescents and young adults have difficulty understanding nicotine concentrations labeled using the two most common metrics (mg/mL and percent nicotine). Errors generally underestimated nicotine strength, and users were not able to accurately compare nicotine concentrations presented as mg/mL and percent nicotine. Difficulty understanding labeling metrics persisted even after



Young e-cigarette users had difficulty understanding nicotine concentrations labeled using the most common metrics, raising concerns about inadvertent exposure to high nicotine levels...

Adults are also confused about nicotine strength

- Also think concentrations presented as % nicotine are weaker than mg/ml
- Likely worse if education or language barriers

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 **Addictive Behaviors**

journal homepage: www.elsevier.com/locate/addictbeh





Adults who use e-cigarettes have difficulty understanding nicotine concentrations presented as mg/ml and percent nicotine

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Inaccurate labels = greater risk to consumers

- Misunderstanding, confusion, disregard about amount of nicotine
- Consumers may inhale more nicotine than intended
- May lead to continued use and addiction
- All labels should use same metric to clearly and accurately convey nicotine strength

E-cig shelf life must be specified

Section 1120.102

- E-cig liquids get contaminated, more toxic over time
- Expiration dates should be required on labels
- Expired or deteriorated products must be removed from shelves



Final rule should protect health of youth and priority populations

- Compliance can't be used to promote safety, quality, or FDA endorsement
- Nicotine concentrations on labels must accurately reflect contents
- Nicotine strength on labels must be presented in measures that youth and adults understand
- Expiration dates must be required on labels, and expired products must be removed from shelves