

Electronic Cigarette Refill Liquids and Child-resistant Packaging: Selected Findings

A Brief Report to the ND Center for Tobacco Prevention and Control Policy

Selected Purposes of Study

1. To determine the accuracy of the labeled quantity of the nicotine content labelling of the e-liquids sold in unlicensed vape stores in North Dakota.
2. To determine whether the packaging of e-liquids sold within the vape stores was child-resistant.

Design and Setting

Cross-sectional study of e-liquids sold by 16 North Dakota vape stores. Data was collected June 9–26, 2015.

Nicotine Content in E-liquid Containers

Measured by the NDSU Core Synthesis & Analytical Services Facility using a high-performance liquid chromatography method.

Results allow a +/- 10% variation in nicotine concentration

- 70 e-liquid containers claimed to contain nicotine ranging from 3 – 24 mg/mL
 - 51% of the containers had nicotine content outside of the labelled amount by +/- 10%
 - 34% had less and 17% had more than by +/- 10%
 - Actual content of nicotine ranged from 66% under the labeled concentration to 172% over the labeled concentration.
- 23 e-liquid containers claimed to contain 0 mg/mL of nicotine
 - 43% contained nicotine; average of 0.19 mg/mL; highest level at 0.48 mg/mL

Table 1 Nicotine content of common concentrations

	6 mg/mL (n = 15)	12 mg/mL (n = 14)	18 mg/mL (n = 14)	24 mg/mL (n = 8)
Mean (mg/mL)	5.49	11.02	17.30	24.21
SD (mg/mL)	1.22	2.84	3.23	1.82
Range (mg/mL)	2.02-7.64	4.22-13.73	11.38-24.76	22.39-26.81
>10% below label, n (%)	7 (46.67%)	4 (28.57%)	4 (28.57%)	0 (0.00%)
>10% above label, n (%)	1 (6.67%)	2 (14.28%)	2 (14.28%)	2 (25.00%)

Figure 1

E-Liquid refill containers labeled as 6 mg nicotine, with warning, “may contain up to 35 mg of nicotine per mL”



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Detailed information about the study can be found at <http://www.ncbi.nlm.nih.gov/pubmed/27079973> and at <http://www.sciencedirect.com/science/article/pii/S0882596316000774>

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