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E-cigarette nicotine labels not always accurate

Date: July 22, 2016

Source: North Dakota State University

Summary: A study found that 51 percent of labels on e-cigarette liquid nicotine containers from 16 North Dakota stores don't accurately reflect the levels of nicotine found in the products. In one instance, actual nicotine levels were 172 percent higher than labeled. The majority of e-cigarette liquid containers also did not provide child-resistant packaging.

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FULL STORY

A study by researchers at North Dakota State University, Fargo, found that 51 percent of labels on e-cigarette liquid nicotine containers from 16 North Dakota stores don't accurately reflect the levels of nicotine found in the products. In one instance, actual nicotine levels were 172 percent higher than labeled. The majority of e-cigarette liquid containers also did not provide child-resistant packaging.

Published in the July-August issue of the *Journal of Pediatric Nursing*, the study examined products purchased from North Dakota retail stores selling e-cigarettes, but not required to have a tobacco retail license. The research team noted that 23 e-liquid containers claimed to have no nicotine, but 43 percent did, in fact, contain nicotine. Levels of nicotine in those e-cigs averaged 0.19 mg/mL, with the highest level found at 0.48 mg/mL.

The NDSU research team includes Kelly Buettner-Schmidt, associate professor of nursing; Donald R. Miller, professor of pharmacy practice; and research scientist Narayanaganesh Balasubramanian.

Of 93 e-liquid containers examined, 70 claimed to contain nicotine ranging from 3-24 mg/mL. Among those containers, 51 percent had nicotine outside the labeled amount, with 34 percent having less nicotine and 17 percent having more than labels specified. Actual content of nicotine ranged from 66 percent under the labeled concentrations to 172 percent over the labeled concentrations.

The Core Synthesis & Analytical Services Facility at NDSU measured the contents of the containers, using a high-performance liquid chromatography method. Results allowed for +/- 10 percent variation in nicotine concentration.

The study also found that 65 percent of the e-liquid containers were not child-resistant, with the potential to be easily ingested by a curious child.

"Mislabeling of nicotine in e-liquids exposes the user to the harmful effects of nicotine," said study author Kelly Buettner-Schmidt, associate professor of nursing at NDSU. "In areas without child-resistant packaging requirements, children may be exposed to harmful nicotine."

Depending on the size of a child, even small levels of ingested liquid nicotine could severely impact a child, according to Buettner-Schmidt, and result in nicotine toxicity, accidental poisoning or death.

The cross-sectional study of e-liquids included products purchased between June 9 and June 26, 2015 from 16 North Dakota retail stores that sell electronic nicotine devices, but are not required to hold a tobacco retail license. The study was conducted prior to new state requirements covering e-cigarettes. The North Dakota Center for Tobacco Prevention and Control Policy funded the study titled "Electronic Cigarette Refill Liquids: Child-Resistant Packaging, Nicotine Content, and Sales to Minors."

In August 2015, North Dakota banned the sale of e-cigarettes and tobacco for those under 18 and now requires child-resistant e-liquid containers, although the amount of nicotine content remains unregulated. In August 2016, the U.S. Food and Drug Administration is scheduled to ban sale of e-cigarette products to those under 18, and prohibit free samples, false or misleading advertising of e-cigarette products. By 2018, the FDA is scheduled require warning labels for e-cigarette products.

An additional study available online in the journal *Tobacco Control*, examined whether 16 retail stores selling e-cigarette products were compliant with North Dakota's smoke-free law. Use of e-cigarettes or evidence of use was observed in 50 percent of stores associated with the study, making them non-compliant with state law. Only 6 percent of stores in the study complied with indoor smoke-free requirements and 44 percent of stores complied with outdoor smoke-free requirements of the state.

Story Source:

Materials provided by **North Dakota State University**. *Note: Content may be edited for style and length.*

Journal References:

1. Kelly Buettner-Schmidt, Donald R. Miller, Narayanaganesh Balasubramanian. **Electronic Cigarette Refill Liquids: Child-Resistant Packaging, Nicotine Content, and Sales to Minors.** *Journal of Pediatric Nursing*, 2016; 31 (4): 373 DOI: 10.1016/j.pedn.2016.03.019
 2. Kelly Buettner-Schmidt, Donald R Miller. **An observational study of compliance with North Dakota's smoke-free law among retail stores that sell electronic smoking devices: Table 1.** *Tobacco Control*, 2016; tobaccocontrol-2015-052888 DOI: 10.1136/tobaccocontrol-2015-052888
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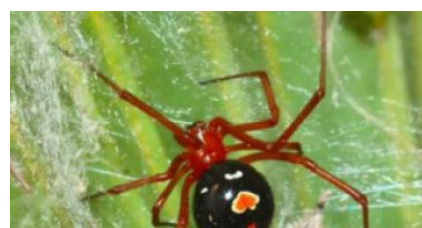
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