



## Policy Approaches to Prevent Liquid Nicotine Poisonings

The increasing use of electronic cigarettes and similar e-devices, such as vape pens, mods, tanks, and personal vaporizers, along with e-liquid refills has created several public health problems requiring policy solutions.<sup>1</sup> One such problem, which governments at all levels have only recently started to consider, is the poisonings caused by the concentrated liquid nicotine used in these products. This fact sheet takes a brief look at this problem and possible policy approaches for addressing it.<sup>2</sup>

### Overview

Although e-cigarette use is not yet at the level of conventional cigarette use, it is increasing dramatically. Approximately one in five U.S. smokers has tried e-cigarettes.<sup>3</sup> Some studies have even shown that teens use e-cigarettes more than traditional tobacco products.<sup>4</sup> Thousands of shops specialize in e-cigarettes and e-liquid in the U.S., and these shops were projected to have over \$1 billion in sales in 2014.<sup>5</sup> Many non-specialty stores, such as gas stations and convenience stores, also sell e-liquid.



E-liquid comes in a variety of enticing flavors, such as cherry, chocolate, gummy bear, and bubble gum, many of which appeal to children.<sup>6</sup> According to one source, approximately 7,764 flavors of e-liquid are available through e-cigarette websites.<sup>7</sup> Many of these websites do not attempt to verify the age of their customers.<sup>8</sup>

The problem is that much of the e-liquid on the market contains nicotine, which depending on the concentration, can be extremely dangerous. Nicotine is an acute toxin:<sup>9</sup> exposure to nicotine by swallowing or contact with the skin can result in nausea and vomiting, as well as respiratory arrest, seizures, or even death.<sup>10</sup> A lethal dosage of nicotine is estimated to be between 1 and 13 milligrams per kilogram of bodyweight.<sup>11</sup> The nicotine level in most e-liquid ranges between 1.8 and 2.4 percent,<sup>12</sup> though the nicotine concentration in a vial of e-liquid can be as high as 10 percent.<sup>13</sup> For a 200-pound person, a teaspoon of 1.8 percent nicotine concentrated e-liquid could be fatal.<sup>14</sup> Children, drawn to e-liquid because of its many kid-friendly flavors, are especially vulnerable to nicotine poisoning.<sup>15</sup>

Data from poison control centers show that poisoning is more than a theoretical risk. Calls to poison control centers regarding e-cigarettes and liquid nicotine have risen dramatically over the past four years.<sup>16</sup> In 2013, over 1,000 calls linked to liquid nicotine exposure were reported in the U.S.<sup>17</sup> In 2014, the number of calls surpassed 3,800.<sup>18</sup> In 2013, Minnesota alone had 50 reported children poisonings from e-liquid, a ten-fold increase from 2012.<sup>19</sup> Seventy-two percent of poison control calls in Minnesota were for children three years old or younger, while 60 percent of calls to the Kentucky poison control center involved children six years old or younger.<sup>20</sup> The first death of a child from ingesting liquid nicotine was reported in December 2014.<sup>21</sup>

Laws that require e-liquid to be sold in packaging that has been designed, as well as tested, to be child-resistant are one way to reduce the incidence of liquid nicotine poisonings, particularly among children. Some representatives of the e-cigarette industry have stated that they support efforts to require e-liquid to be sold in child-resistant packaging.<sup>22</sup> Packaging companies have responded to the need for better packaging in the growing e-cigarette marketplace.<sup>23</sup> The United States Consumer Products Safety Commission (CPSC) provides a list of companies that manufacture and test child-resistant packaging, as well as the different types of packaging available.<sup>24</sup>

### Select Legislation and Policies

A few states have already enacted legislation requiring child-resistant packaging for e-liquid, and federal legislation has also been introduced. Another approach involves requiring e-liquid containers to include labels that show either health warnings or ingredient lists. Below are a few examples of laws and legislation related to e-liquid packaging and labeling. This list is not exhaustive; legislation is pending in many states as of April 2015. Local and state governments might also want to consider other legislative avenues or regulatory options.

Before using any language from the following policies, make sure the provision is practical and legal in your jurisdiction, and identify any issues that could affect implementation. Please note that the Tobacco Control Legal Consortium does not endorse or recommend any of the following policy approaches. These select examples are included simply to illustrate how various jurisdictions have approached the regulation of these products.

State	Law	Select Language
Minnesota	<a href="#">MINN. STAT. § 461.20 (2014)</a>	For purposes of the section, “child-resistant packaging” is defined as set forth in Code of Federal Regulations, title 16, section 1700.15(b)(1), as in effect on January 1, 2015, when tested in accordance with the method described in Code of Federal Regulations, title 16, section 1700.20, as in effect on January 1, 2015 . . . The sale of any liquid, whether or not such liquid contains nicotine, that is intended for human consumption and use in an electronic delivery device, as defined in section 609.685, subdivision 1, that is not contained in packaging that is child-resistant, is prohibited.
New York	<a href="#">GEN. BUS. LAW § 399-gg</a>	No person, firm or corporation shall sell or offer for sale any

	<a href="#">(2014)</a>	electronic liquid ... unless the electronic liquid is sold or offered for sale in a child resistant bottle which is designed to prevent accidental exposure of children to electronic liquids.
<b>Vermont</b>	<a href="#">7 V.S.A. § 1012 (2014)</a>	<p>(a) Unless specifically preempted by federal law, no person shall manufacture, regardless of location, for sale in; offer for sale in; sell in or into the stream of commerce in; or otherwise introduce into the stream of commerce in Vermont:</p> <ul style="list-style-type: none"> <li>(1) any liquid or gel substance containing nicotine unless that product is contained in child-resistant packaging; or</li> <li>(2) any nicotine liquid container unless that container constitutes child-resistant packaging.</li> </ul> <p>(b) As used in this section:</p> <ul style="list-style-type: none"> <li>(1) “Child-resistant packaging” means packaging that is designed or constructed to be significantly difficult for children under five years of age to open or obtain a toxic or harmful amount of the substance contained therein within a reasonable time and not difficult for normal adults to use properly, but does not mean packaging which all such children cannot open or obtain a toxic or harmful amount within a reasonable time.</li> <li>(2) “Nicotine liquid container” means a bottle or other container of a nicotine liquid or other substance containing nicotine which is sold, marketed, or intended for use in a tobacco substitute. The term does not include a container containing nicotine in a cartridge that is sold, marketed, or intended for use in a tobacco substitute if the cartridge is prefilled and sealed by the manufacturer and not intended to be opened by the consumer.</li> </ul>
<b>Davis County, Utah</b>	<a href="#">Electronic Smoking Device Regulation</a> , § 5.1.2 (2014)	<p>Labels shall clearly display:</p> <ul style="list-style-type: none"> <li>(1) Nicotine and nicotine content</li> <li>(2) Vendor name</li> <li>(3) Safety warnings</li> </ul> <p>Labels must be smear-resistant.</p>
<b>State</b>	<b>Proposed Legislation</b>	<b>Select Language</b>
<b>Virginia</b>	<a href="#">H.B. 2036</a> (bill proposed in 2015; passed House and Senate; pending governor approval)	A. No person shall sell or distribute at retail or offer for retail sale or distribution a liquid nicotine container in the Commonwealth on or after January 1, 2016, unless such liquid nicotine container ... Includes a warning label that indicates that the container should be kept out of the reach

of children that satisfies labeling requirements prescribed by the Board pursuant to subsection B.

B. The Board shall adopt regulations, consistent with federal standards, establishing ... Labeling requirements for warning labels for a liquid nicotine container, including prescribing the size and location of such warning labels.

**Washington** [S.B. 5573](#) (bill proposed in 2015)

(1) The department must adopt a rule regulating the labeling and advertisement of vapor products.

(a) The rule must require a manufacturer that sells, offers for sale, or distributes a vapor product to label the vapor product with a:

- (i) Disclosure of the nicotine content of the vapor product, measured in milligrams per milliliter and verified by an independent laboratory certified by the board; and
- (ii) warning regarding the harmful effects of nicotine.

(b) In addition, the rule must require a manufacturer that advertises a vapor product to include in any advertisement a:

- (i) Disclosure of the nicotine content of the vapor product, measured in milligrams per milliliter and verified by an independent laboratory certified by the board; and
- (ii) warning regarding the harmful effects of nicotine ...

A vapor product retailer must maintain on the premises the original labeling and packaging provided by the manufacturer for all vapor products that are sold or offered for sale by the establishment separately from the original packaging designed for retail sale to the consumer. The original labeling and packaging from which the contents are sold separately must be maintained during such time as the contents of the package are offered for sale and may be disposed of upon the sale of the entire contents of such package.

**Federal** [S. 142](#), Child Nicotine Poisoning Prevention Act of 2015 (similar bill proposed in 2014)

The term “liquid nicotine container” means a consumer product, as defined in section 3(a)(5) of the Consumer Product Safety Act (15 U.S.C. 2052(a)(5)) notwithstanding subparagraph (B) of such section, that consists of a container that— (A) has an opening from which nicotine in a solution or other form is accessible and can flow freely through normal and foreseeable use by a consumer; and (B) is used to hold soluble nicotine in any concentration. ... The term “nicotine” means any form of the chemical nicotine, including any salt or complex, regardless of whether the chemical is naturally or synthetically derived. ... The term

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“special packaging” has the meaning given such term in section 2 of the Poison Prevention Packaging Act of 1970 (15 U.S.C. 1471). ... [N]ot later than 1 year after the date of the enactment of this Act, the [Consumer Product Safety] Commission shall promulgate a rule requiring special packaging for liquid nicotine containers.

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## Contact Us

Please feel free to contact the Tobacco Control Legal Consortium at (651) 290-7506 or [publichealthlaw@wmitchell.edu](mailto:publichealthlaw@wmitchell.edu) with any questions about the information included in this fact sheet or to discuss local concerns you may have about drafting or implementing any policy.

*Last updated: April 2015*

## Notes

<sup>1</sup> See the Tobacco Control Legal Consortium’s [Regulating Electronic Cigarettes and Similar Devices](#) for more background on e-cigarettes and some of the policy issues associated with them.

<sup>2</sup> The information contained in this document is not intended to constitute or replace legal advice.

<sup>3</sup> Brian A. King et al., *Awareness and Ever Use of Electronic Cigarettes among U.S. Adults, 2010-2011*, 15 NICOTINE & TOBACCO RESEARCH 1623 (2013).

<sup>4</sup> THE NATIONAL INSTITUTE ON DRUG ABUSE, MONITORING THE FUTURE: NATIONAL SURVEY RESULTS ON DRUG USE 8 (2014), available at <http://www.monitoringthefuture.org/pubs/monographs/mtf-overview2014.pdf>.

<sup>5</sup> Karen E. Klein, *Healthy Markups on E-Cigarettes Turn Vacant Storefronts Into ‘Vape Shops’* BLOOMBERG BUSINESSWEEK, OCT. 3, 2013, available at <http://www.businessweek.com/articles/2013-10-03/healthy-markups-on-e-cigarettes-turn-vacant-storefronts-into-vape-shops>.

<sup>6</sup> Letter from National Association of Attorneys General to Margaret Hamburg, Commissioner of the Food and Drug Administration (Sept. 24, 2013), available at <http://www.naag.org/assets/files/pdf/E%20Cigarette%20Final%20Letter%20%285%29%281%29.pdf>.

<sup>7</sup> Brady Dennis, *Booming E-Cigarette Market in Need of Greater Oversight, Studies Say*, WASH. POST, June 17, 2014, available at [http://www.washingtonpost.com/national/health-science/booming-e-cigarette-market-largely-unregulated-studies-say/2014/06/16/e2a4c5ee-f589-11e3-a606-946fd632f9f1\\_story.html](http://www.washingtonpost.com/national/health-science/booming-e-cigarette-market-largely-unregulated-studies-say/2014/06/16/e2a4c5ee-f589-11e3-a606-946fd632f9f1_story.html).

<sup>8</sup> Rebecca S. Williams et al., *Electronic Cigarette Sales to Minors via the Internet*, 169 JAMA PEDIATRICS e1563 (2015).

<sup>9</sup> U.S. DEP’T OF HEALTH AND HUMAN SERVS., THE HEALTH CONSEQUENCES OF SMOKING – 50 YEARS OF PROGRESS: A REPORT OF THE SURGEON GENERAL 109-27 (2014), available at <http://www.surgeongeneral.gov/library/reports/50-years-of-progress/index.html#execsumm>.



<sup>10</sup> Stanton Glantz, *Child Resistant Packaging of Electronic Cigarette Devices and Refill Liquid to Prevent Child Poisoning*, Center for Tobacco Control Research & Education (July 8, 2014), <http://tobacco.ucsf.edu/child-resistant-packaging-electronic-cigarette-devices-and-refill-liquid-containers-containing-nicot>.

<sup>11</sup> Robert A. Bassett et al., *Nicotine Poisoning in an Infant*, 370 N. ENGL. J. MED. 2240 (2014), available at <http://www.nejm.org/doi/full/10.1056/NEJMc1403843>.

<sup>12</sup> *Id.*

<sup>13</sup> See, e.g., *120ml of 100mg Flavorless USP Nicotine Liquid*, VAPING ZONE, [http://vapingzone.com/product-info.php?120\\_ml\\_of\\_100\\_mg\\_Flavorless\\_USP\\_Nicotine\\_Liquid-pid589.html](http://vapingzone.com/product-info.php?120_ml_of_100_mg_Flavorless_USP_Nicotine_Liquid-pid589.html); see also Matt Richtel, *Selling a Poison by the Barrel: Liquid Nicotine for E-Cigarettes*, N.Y. TIMES, March 23, 2014, available at [http://www.nytimes.com/2014/03/24/business/selling-a-poison-by-the-barrel-liquid-nicotine-for-e-cigarettes.html?\\_r=1](http://www.nytimes.com/2014/03/24/business/selling-a-poison-by-the-barrel-liquid-nicotine-for-e-cigarettes.html?_r=1).

<sup>14</sup> Bassett et al., *supra* note 11.

<sup>15</sup> Press Release, *American Association of Poison Control Centers (AAPCC) and Poison Centers Issue Warning About Electronic Cigarettes and Liquid Nicotine* (Mar. 25, 2014), available at <http://www.aapcc.org/press/29>.

<sup>16</sup> Debra Miller *Poison Control Calls Up Related to E-Cigarettes and Children*, COUNCIL ON STATE GOVERNMENTS KNOWLEDGE CENTER (June 19, 2014), available at <http://knowledgecenter.csg.org/kc/content/poison-control-calls-related-e-cigarettes-and-children>; Press Release, Centers for Disease Control and Prevention, *New CDC Study Finds Dramatic Increased in E-Cigarette-Related Calls to Poison Centers* (Apr. 3, 2014), available at <http://www.cdc.gov/media/releases/2014/p0403-e-cigarette-poison.html>.

<sup>17</sup> AAPCC Press Release, *supra* note 15.

<sup>18</sup> AAPCC website (last accessed April 13, 2015), available at <http://www.aapcc.org/alerts/e-cigarettes>.

<sup>19</sup> Richtel, *supra* note 13; Jeremy Olson, *New E-Cig Fear: Poisoned Kids*, MINN. STAR TRIB., Mar. 19, 2014 at A1.

<sup>20</sup> Dennis, *Booming E-Cig Market*, *supra* note 7.

<sup>21</sup> *Police Say Baby Died After Ingesting Liquid Nicotine*, WABC-TV, Dec. 11, 2014, available at <http://7online.com/news/police-say-baby-died-after-ingesting-liquid-nicotine/431827/>.

<sup>22</sup> Dennis, *Booming E-Cig Market*, *supra* note 7.

<sup>23</sup> See, e.g., *E-liquid Packaging for Vaping and E-Cigarette Markets*, BRAND PACKAGING, <http://www.brandpackaging.com/articles/84781-e-liquid-packaging-for-vaping-and-e-cigarette-markets>.

<sup>24</sup> U.S. Consumer Products Safety Commission, *Guide to Child Resistant and Senior-Friendly Packages* (2011), available at <http://www.cpsc.gov/en/Regulations-Laws--Standards/Statutes/Poison-Prevention-Packaging-Act/Child-Resistant-and-Senior-Friendly-Packages-packaging-guide>.