

E-Cigarette & Marijuana Display Kit

Train the Trainer and User Guide



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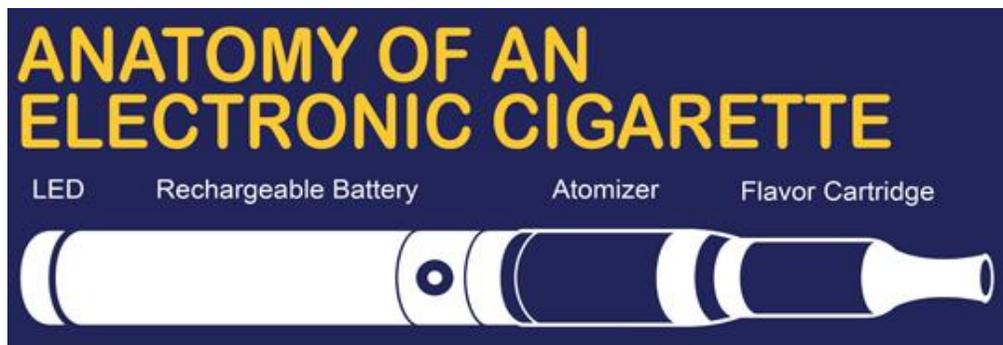
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INTRODUCTION AND BACKGROUND

Electronic cigarettes, also known as e-cigarettes, are battery-operated products designed to deliver vaporized liquid that contains nicotine, flavors, and other chemicals. These devices heat the liquid product (called e-liquid, e-juice, or juice) so that it becomes an aerosol that is inhaled by the user.

E-cigarette devices go by many names including

- E-devices
- E-pens
- E-hookahs
- Hookah pens
- Vape pipes
- Vape pens
- Vaporizers



“Vaping” is the act of using an electronic cigarette, which can resemble the act of smoking. Whereas a traditional cigarette involves a combustion reaction that burns plant material to deliver nicotine and release smoke, e-cigarettes heat the essential oils from plant materials creating a vapor that is inhaled. In general, these devices look like the schematic above, but there are more expensive versions that use alternative elements to heat liquid products as well as disposable, one time use products. These will be discussed further in a later section of this guide.

The flavor cartridge of a typical vape pen, or e-cigarette, holds up to 3 milliliters (mL) of liquid. Liquids are sold with variable nicotine concentrations, typically from 6mg/mL up to 36mg/mL. This means that a “full” e-cigarette can deliver 18-108mg of nicotine. In comparison, an individual combustible cigarette most commonly contains 12mg nicotine, but depending on the brand and type can contain anywhere from 8-20mg. There are e-liquids potent enough where one bottle is the equivalent of 3 boxes of cigarettes!

Combustible Cigarettes	Low-dose E-cigarettes	High-dose E-cigarettes
12mg Nicotine/cig	6mg/ml	36mg/ml
20 cigarettes/pack	15ml/bottle	15ml/bottle
240mg Nicotine/pack	90mg Nicotine/bottle	540mg Nicotine/bottle



Since products are new to the market, there has not been adequate time to determine the long-term health effects of e-cigarette use, especially in relation to health risks of traditional cigarette use. Moreover, there is very limited knowledge of the makeup and potential health risks associated with second-hand exposure to vapors; however, there is some recent evidence that the when created under intense voltage, vapors contain formaldehyde-releasing agents, some of the same cancer causing chemicals as

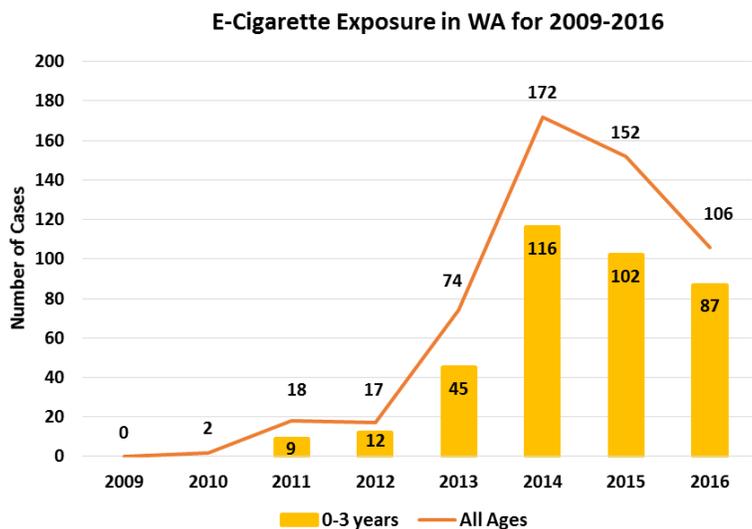
traditional cigarettes¹. This evidence remains highly disputed as there is no consensus on whether the intense voltage used in the study (5.0V) is a realistic power setting for the typical e-cigarette user.

While there is anecdotal evidence that traditional combustible cigarette smokers have been able to quit using e-cigarettes, enjoying an improved quality of life, these claims have yet to be validated scientifically. A recent report from Public Health England concluded that e-cigarettes should be put forth for consideration as smoking cessation devices since limited available evidence suggests that e-cigarette use is less harmful than combustible cigarette use². While this report has been read by some as bolstering support for the e-cigarette industry, it is important to recognize the authors' intent from the angle of harm-reduction: a group of experts believe that early evidence seems to suggest that e-cigarettes are less harmful to one's health **WHEN compared to combustible cigarettes**. Given that the risk of illness and death associated with the use of tobacco products is so great, it is the opinion of the Washington Poison Center that to say a product is safer than cigarettes does not mean it is safe, nor does it mean it is safer for a child or youth.

In addition, the Food and Drug Administration (FDA) has not yet created federal regulations for the e-cigarette industry. In the summer of 2015 the FDA took steps to begin the rule making process, however at this time there are no federal rules and regulations addressing e-liquid ingredients, labeling requirements, or packaging safety standards. This also means that e-cigarette products are not officially considered smoking cessation devices by the FDA. Currently the only state-wide regulation in Washington prohibits sale of e-cigarette products to anyone under 18 years of age.

E-CIGARETTE USE AND EXPOSURE IN WASHINGTON STATE

The Washington Poison Center began receiving calls related to e-cigarette exposures in 2010. The total number of calls remained relatively stable and infrequent until 2014. While the total number of e-cigarette exposures was still a low proportion of total calls WAPC received, the exposures of 2014 revealed two key points. First, even though minimal, 2014 exposures increased to 172 compared to 74 in 2013. Second, the vast majority of exposures were in children, specifically 0-3 year olds. Preliminary calls data from 2016 shows that the number of calls related to e-cigarette products is now significantly decreasing. However, the trend continues that the majority of those exposures are in children 0-3 years old.



In response to a growing number of calls to poison centers across the country related to e-liquid exposures in children, local, state, and federal government agencies across the country are taking action to regulate the industry and promote standards that protect those most vulnerable: children. A more thorough description of why children are more vulnerable can be found in the “E-liquids or Juices” section of this guide.

¹ Jensen RP, Luo W, Pankow JF, Strongin RM, Peyton DH. Hidden Formaldehyde in E-Cigarette Aerosols. N Engl J Med 2015;372:392-394.

² McNeill A, Brose LS, Calder R, Hitchman SC, Hajek P, McRobbie H. E-cigarettes: an evidence update. A report commissioned by Public Health England. Aug 2015.

E-CIGARETTES AND YOUTH

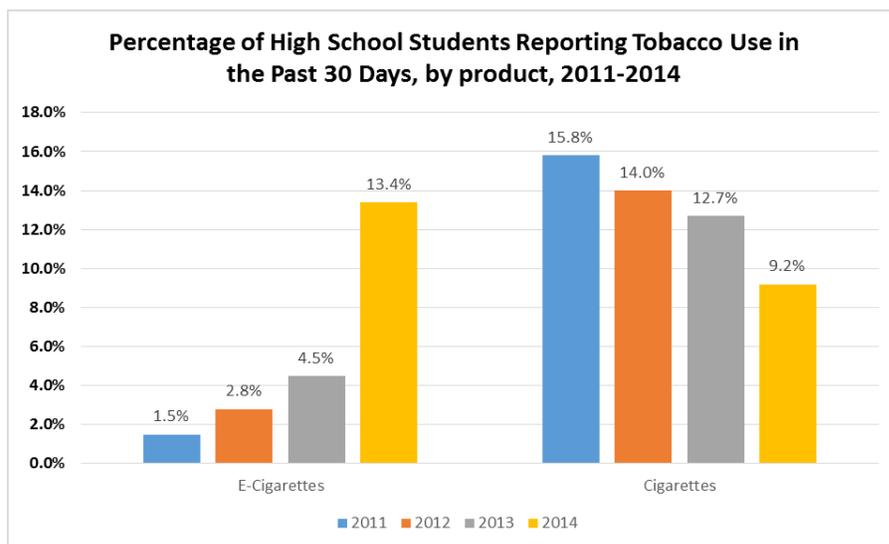
The Centers for Disease Control and Prevention (CDC) monitor tobacco related beliefs, attitudes, behaviors, and influences in youth on a national scale through the National Youth Tobacco Survey (NYTS). Since 2011, the NYTS has asked middle- and high-schoolers about their use of e-cigarettes. In that time, the percentage of students who reported using e-cigarettes in the last 30 days has increased dramatically, reaching a new high of 13.4% of high-schoolers and 3.9% of middle-schoolers in 2014. According to the survey, e-cigarettes are now the most commonly used tobacco product by high-schoolers and middle-schoolers, surpassing combustible cigarettes³.

With such a dramatic increase in use, it is important to know if an increase in use of e-cigarettes is associated with an increased likelihood that a student will also use combustible cigarettes. This question is important since at both the federal and state levels there are goals to reduce the overall proportion of youth using tobacco products and being exposed to tobacco marketing.

For the most part the connection between the use of e-cigarettes and initiation of combustible cigarettes has been measured using the “willingness” or “openness” a youth has to smoking a combustible cigarette. This “willingness” or “openness” is calculated

based on how they answer questions about their intention to smoke in the next year and if that intention may change if their friends begin smoking. Past studies focused solely on combustible cigarette initiation have demonstrated that the answers to these questions are good predictors for actual future use. A handful of studies have shown that both high schoolers and young adults who report use of e-cigarettes have greater “willingness” or “openness” to smoke combustible cigarettes than their counterparts who did not use e-cigarettes^{4,5}.

In the fall of 2015, the results of a prospective cohort study have lent the most credibility to claims that smoking e-cigarettes leads to smoking combustible cigarettes⁶. The study done by Leventhal et al. enrolled 9th graders in Los Angeles, CA who had never smoked combustible cigarettes but potentially had smoked e-cigarettes. Students were re-interviewed six and twelve months after



³ Arrazola RA, Singh T, Corey CG, Husten CG, Neff LJ, Apelberg BJ, Bunnell RE, Choiniere CJ, King BA, Cox S, McAfee T, Caraballo RS. Tobacco Use Among Middle and High School Students—United States, 2011-2014. *Morbidity and Mortality Weekly Report* 2015;64(14):381-385

⁴ Wills TA, Sargent JD, Knight R, Pagano I, Gibbons RX. E-cigarette use and willingness to smoke: a sample of adolescent non-smokers. *Tob Control* 2015;0:1-8

⁵ Bunnell RE, Agaku IT, Arrazola RA, Apelberg BJ, Caraballo RS, Corey CG, Coleman BN, Dube SR, King BA. Intentions to Smoke Cigarettes Among Never-Smoking US Middle and High School Electronic Cigarette Users: National Youth Tobacco Survey, 2011-2013. *Nicotine Tob Res* 2015;17(2):228-235.

⁶ Leventhal AM, Strong DR, Kirkpatrick MG, Unger JB, Sussman S, Riggs NR, Stone MD, Khoddam R, Samet JM, Audrain-McGovern J. Association of Electronic Cigarette Use With Initiation of Combustible Tobacco Product Smoking in Early Adolescence. *J Am Med Assoc* 2015;314(7):700-707.

the initiation of the study to determine their use of combustible cigarettes. The study found that students who reported the use of e-cigarettes at the start of the study were almost 3 times more likely to report the initiation of combustible cigarette use over the next year compared to their non-e-cigarette using peers. This is evidence that e-cigarettes may in fact be a “gateway” to combustible cigarette or other tobacco use. However, the study also analyzed responses for those students who were combustible cigarette users but not e-cigarettes users when the study began. Similarly, the authors found that students who reported the use of combustible cigarettes at the start of the study were more likely to report the initiation of e-cigarettes use over the next year. Taken together, this information suggests that while exposure to e-cigarettes may play a role in the initiation of smoking combustible cigarettes, this relationship may be bidirectional and not straight forward.

Another similar study⁷ released late in 2015 from Connecticut showed that e-cigarette using youth and young adults were 8 times more likely to initiate other tobacco use than their non-e-cigarette using peers. However, this study was completed with a much smaller sample of students and also selected students who were not perceived to be at risk for smoking. Thus this group was presumable more homogenously white and of higher socio-economic status than a random sample of youth.

⁷ Primack, Brian A., et al. "Progression to traditional cigarette smoking after electronic cigarette use among US adolescents and young adults." *JAMA pediatrics* 169.11 (2015): 1018-1023.

PRODUCTS



Reusable Vape Pen or E-cigarette: Vape pens have four basic components: a battery/power source, heating element/atomizer, refillable cartridge, and a mouth piece. Most claim to have a “child-safety lock” requiring users to press the button on the front 3-5 times in a span of a few seconds to turn the unit on. The refillable cartridge will unscrew allowing users to add ~3ml of a liquid of their choice. Some models are battery powered and require single-use batteries, while others can be unscrewed and charged. The particular model on the left can be purchased at an AM/PM convenience store for about \$25. They can also be purchased on the internet for less than \$10.

Vaporizers may also look like rectangular boxes as shown to the right. These devices are more powerful and require more battery power and users to create their own heating elements. According to a vendor we spoke with, true “vapers” prefer this style. High quality heating elements more evenly heat liquids leading to a more effective delivery of the nicotine. It was his opinion that someone trying to quit combustible cigarettes will be more likely to succeed using this type of device as it leads to an experience more similar to that of cigarettes.



Disposable E-cigarettes: The kit contains three different disposable or one time use e-cigarettes—blu, NJOY, and Tsunami. Unlike a reusable pen, there is no way to turn a disposable on or off. To begin smoking, the user simply inhales on the end of the pen.



As the NJOY and Tsunami examples demonstrate, some disposables are created to look like a traditional cigarette. Some even light up as users take a drag, mimicking the burning of a combustible. Note that the Tsunami packaging says that it lasts for “800 puffs”, and at roughly \$7, is cheaper than the average pack of cigarettes. It can be purchased at a Vape Shop, but they are also available at convenience stores in a variety of flavors. The NJOY package was purchased at an AM/PM convenience store for about \$8. Like traditional cigarettes, these items are typically kept behind the counter and only handled by shop employees before sales.

Alternatively, the blu brand disposable is not marketed as overtly similar to a combustible cigarette. While it is only slightly larger than the average cigarette, both the packing and device are clean and smooth, having the appearing of being much more expensive and refined. blu is a popular disposable brand, and their products are often advertised in the windows of convenience stores. This particular can be purchased at an AM/PM store for about \$10.



E-liquids or Juices: Typically, liquids are purchased in these 15ml containers, which is enough liquid to refill an e-cigarette three times. E-liquids can now also come in larger size containers. These are the items in the kit most likely to inflict harm on a child. They smell good, the packaging is appealing, and they are similar in appearance to some candies. In reference to exposures and routes of exposure, kids cannot be considered “small adults”. Toxicological research has shown children tolerate lower doses of nicotine than adults. Anatomically speaking, their body systems are a little different. Specifically,

children have soft porous skin, and thus they can be exposed to greater amounts of nicotine through the skin. Kids also have higher frequencies of “hand to mouth” and “hand to eye” behaviors. This means that a child is much more likely to touch his or her mouth and his or her eyes than adults, and thus an exposure that starts on the hand can be easily be introduced to the eyes and mouth.

A less-than-thorough examination of the labeling reveals how little information it contains. Since there are no labeling standards or warning label requirements, the actual information provided varies brand to brand. Typically labels include the concentration of nicotine listed simply in milligrams. A bottle may simply read “18mg”. Labels do not indicate if this is the amount of nicotine in the entire bottle or in each mL. Moreover, most do not list the volume of liquid in the bottle. Well educated users may know these key pieces of information not listed on the bottles, but users who purchase at the average convenience store will not be given this counselling. Without accurate listing of the nicotine concentrations and approximate volumes consumed, the specialists at the Washington Poison Center are unable to determine exposures and have difficulty recommending accurate treatment advice.



In addition to insufficient liquid volumes and nicotine concentrations, any warnings and ingredient lists are often printed in tiny font sizes making them illegible. Washington Poison Center would like to see the FDA require appropriate standardized warning labels, nicotine concentrations, liquid volumes, and the listing of the poison center 1-800 number on all packaging.

Makers are largely moving away from the eye-dropper bottles originally used and moving towards glass bottles with pipettes, which is increasing the price per vial from \$9 to \$14-\$15. We believe this may be the result of a push from consumers and health groups towards child-resistant packaging.



In addition to name brand liquids, vape shops are not allowed to sell “house juices” in stores as of August 8th. Generally, this involves the purchase of larger amount of the liquid which is then diluted, flavored, and repackaged into smaller vials in the store. While the packaging and labeling of name brand products has become better, note that the label on the “house juices” contains less information.

MARIJUANA VAPING

Marijuana can also be vaped. Like vaping nicotine, the goal of vaping marijuana is to heat a product to vaporize the psychoactive ingredients (THC) generally contained in an oil. For marijuana, this means that the act of vaping marijuana can be done using plant material, wax/butane hash oil (BHO), or liquid/oil (also called CO₂ oil or flower oil). Each of these will be discussed in this section.

In general, the essential cannabis oils require a higher temperature to vaporize and thus a standard vape pen cannot be used to vape marijuana. There are specific devices created to vape each of the marijuana forms mentioned above, however, as vape pen technology has increased, there are now specific heating element and cartridge modifications sold to adapt a vape pen for marijuana use.

Why vape marijuana? First of all, the form of marijuana that is vaped contains a very high concentration of THC, so by vaping one can get higher, faster than smoking or ingestion. Also, if the substance being vaped is processed correctly, there will not be the same skunky odor that occurs with the burning of smoking plant material. This also leads to increased discretion. Similar to many of the ways that using e-cigs can be discrete, the need to be discrete when using marijuana seems to be more pronounced – most

likely because of laws and culture. “Stealth vaping” is not just the idea that you can hide these small devices but that there seems to be a correlation between the amount of time one holds his or her breath after taking a hit, and the amount of visible vapors exhaled. As with using e-cigs, vaping marijuana is also perceived to be “healthier” because one is avoiding inhaling the smoke and other particles released during a combustion reaction when smoking a joint.



Wax/Butane Hash Oil: Butane hash oil is create through an extraction process. The THC is separated from the plant material using heat and the solvent, butane. What the extraction process produces is the essential oil containing THC. Unlike nicotine, this essential oil is more solid/wax-like at room temperature (e.g. coconut oil), hence the colloquial term “wax”.

In your kit, you will have the Greenco Science Micro G pen (pictured to the left). This is an example of one such device that is used for marijuana oil products. This device can be purchased at a recreational marijuana retailer.



When the device is opened, you should see the heating element: a metal coil. In this device you would place a small amount of butane hash oil (going by names such as BHO, wax, shatter, honeycomb) onto those coils. When turned on, the coils heat to 350-450°F to vaporize the THC, which then passes through a mouthpiece and is inhaled. Accompanying this is the small glass container used to store your concentrate. ****Note that this is NOT the practice known as dabbing.**

Other examples of devices to vape “wax”:



Cannabis E-liquids using BHO: One way to attempt making marijuana e-liquid is to take the butane hash oil (BHO) and mix it into a liquid (a homemade glycerin mix or even a store-bought nicotine e-liquid) to dissolve it. The problem is that the BHO concentrates are waxy and thus don’t like to dissolve into a liquid—think about oil and water separating or a vinaigrette salad dressing before you shake it. As a result, when mixed, these e-liquids have a tendency to separate, have a short shelf life, and leave behind a sticky film. Despite this fact, there are still numerous internet forums and blogs that describe the attempts, failures, and best practices for creating a homemade marijuana liquid.



CO₂ Oil & Cannabis E-liquids: This oil differs from BHO in the way that it is extracted: instead of using butane, extraction is done with high pressure and CO₂ to create an oil that is a liquid at room temperature and thus stable for use in creation of a liquid usable in a vaping device.

There are specific reusable pen devices for these liquids. One would purchase the base, which contains the battery and heating element, separately from the cartridge and mouthpiece. The cartridges come pre-loaded and are screwed onto the base for use. Each of these “re-fills” costs about \$45.

In addition to reusable devices that look similar to reusable e-cigarette devices, there are also a growing number of brands that sell one time use products. One example from the Washington retail market is JUJU Joints, which are marketed as “a sleek, discreet” product that “fits in the palm of your hand”. According to discussion had with recreational retailers,



individuals who are trying marijuana for the first time or who are coming back to using now that it is legal are most likely to purchase these types of products.



Plant/Herb Materials: Most recent is the development of a vaping device that can heat finely ground cannabis herb/flower to vaporize the THC without involving a combustion reaction. To avoid the ignition and combustion of the materials, these devices are generally more sophisticated in their internal components. They need to heat hotter than the 190°F temperature to vape nicotine liquids but also cannot get too hot as to ignite the herb. To achieve that end, these products usually offer greater heat control and the heating elements have ceramic inserts to disperse heat. This is the same idea as many stove coils---the ceramic surface evenly distributes the heat which prevents one single spot from getting to hot and causing ignition. (Note that similar devices used to vape dried tobacco are also in the works.)



*For more information on cannabis vaping, [this paper](#) by a group in Switzerland is highly recommended. It does contain some analytical chemistry that is difficult to comprehend, but that portion can be skimmed without taking away from the authors' conclusions.

Link: <http://www.mdpi.com/1660-4601/12/8/9988/htm>

TIPS

- Your kit is packaged in a tackle box that can be locked. We suggest that you store the box in a cabinet or drawer that is locked. We also suggest adding a small combination lock (luggage size) to the wholes on either side of the fastener such that box itself is locked closed.
- Note that some schools and other educational or healthcare facilities are typically smoke-free campuses. If you intend to take the kit with you to one of these locations, it is always suggested that you let event organizers/administrators know that you will be bringing e-cigarette products.
- Your kit contains liquids sold as nicotine-free, or 0mg/ml concentration, and various other concentrations of nicotine. Since there is some evidence that no e-liquids are truly nicotine-free, we suggest you treat the contents of the kit as if they are all poisons. You are advised to use caution when handling the items. If your audience does not have the ability to easily wash hands, we suggest that they do not handle the liquids. Instead you may offer to hold the items while they smell and visually assess the packaging and labels.
- *The kit include hand sanitizer that you can use to take the smell of the liquids off your hands. However, this will not fully remove the e-liquids. Always wash your hands after using the kit, especially before eating.*
- It is okay to pass around the devices. The reusable devices do not pose as much of a threat, but the disposable items *could* break open. Just ask the audience to handle them gently, and always store them in the original packaging.
- The seal of these liquids will breakdown over time. Periodically check the seals to insure nothing is leaking. Remove the leaking item and contact the Washington Poison Center for replacements if necessary.

ADDITIONAL RESOURCES

More information from the Washington Poison Center on e-cigarettes can be found on the [E-Cigarettes and You](#) section of our website.

You may find the following online and is helpful information:

- [Snohomish Health District Vaping and Vapor Product Page](#)
- [Prevent Child Injury E-cig Toolkit](#)
- [National Youth Tobacco Survey Results](#)
- [Seattle Children's Hospital's Mama Doc Blog](#)
- [CDC—Smoking & Tobacco Use Group](#)

For questions and concerns about the products or information, contact:

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