

Teen E-Cigarette Vaping- Fact and Fiction: It's not just a "mist"



Linda Schanne MSN, RN-C, CEN, CCRN
Radnor Board of Health

&

Chris Flanagan
Superintendent Radnor Police

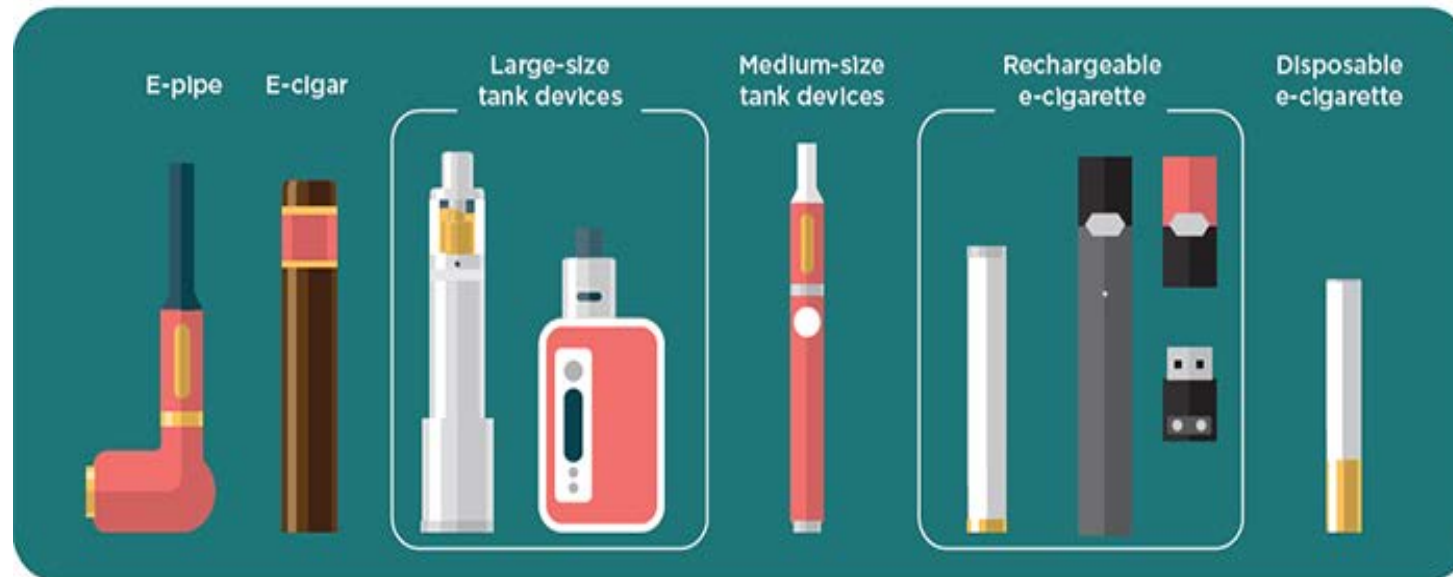
May 21st, 2018
Radnor Board of Health



What is VAPING?

- *Vaping is done by using a E-cigarette which produce an aerosol by heating a liquid that usually contains nicotine—the addictive drug in regular cigarettes, cigars, and other tobacco products—flavorings, and other chemicals that help to make the aerosol.*
- ENDS = (Electronic Nicotine Delivery System) known as a E-cigarette
- Users inhale this aerosol into their lungs.
- Bystanders can also breathe in this aerosol when the user exhales into the air.

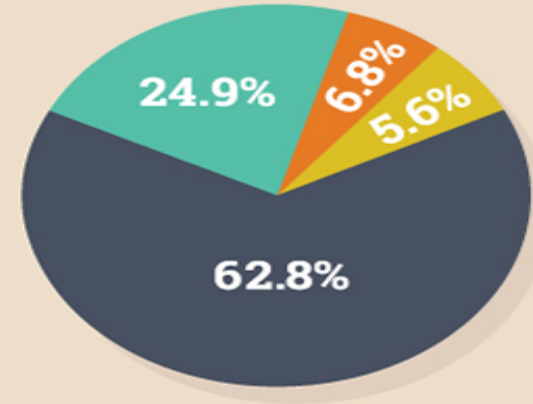
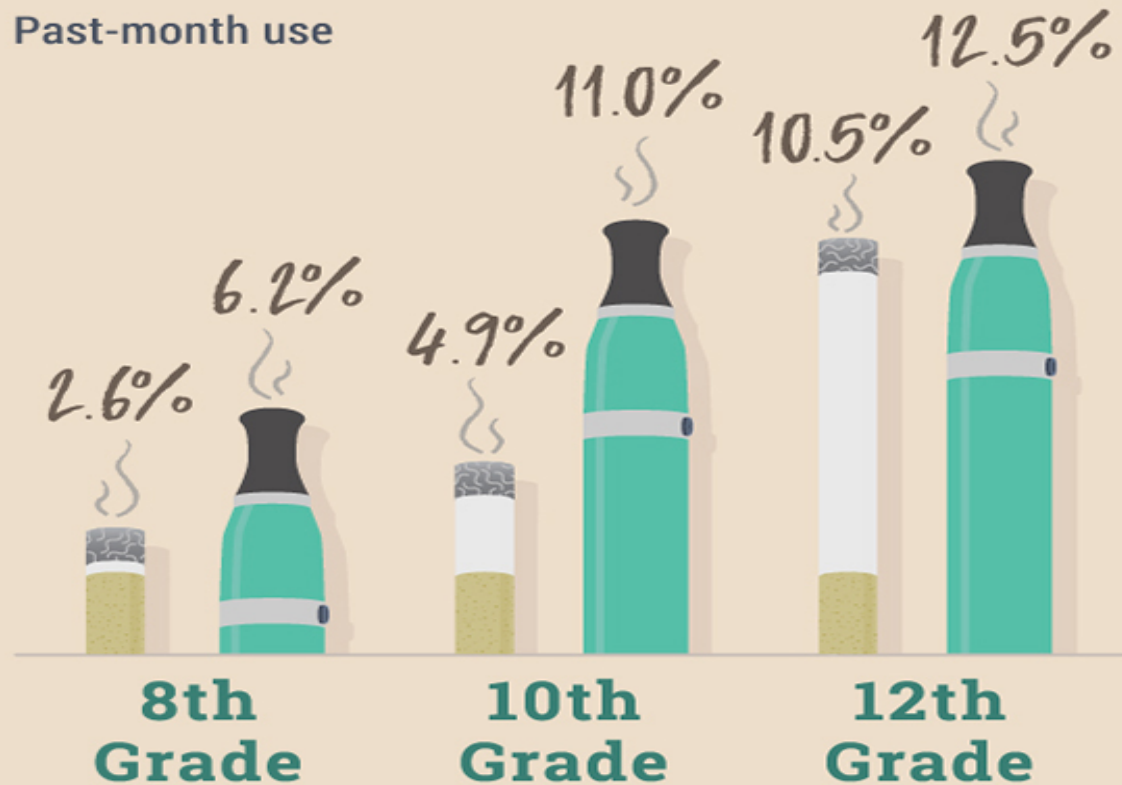
Various
ENDS
→



Why should we be concerned?

TEENS MORE LIKELY TO USE E-CIGARETTES THAN CIGARETTES

Past-month use



What did 12th graders think was in the mist they inhaled from an e-cigarette? Despite the belief that the liquid used in e-cigs contains only flavoring, it also might contain nicotine.

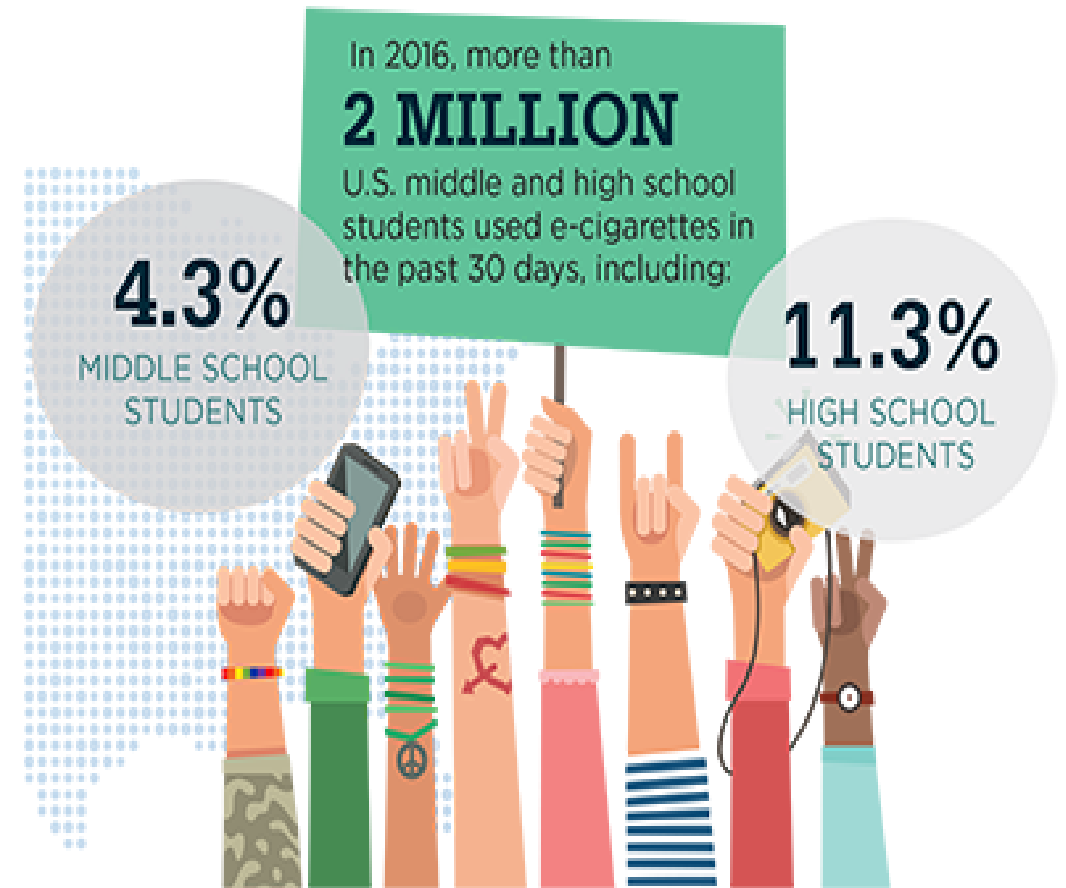
- Flavoring
- Nicotine
- Marijuana or hash oil
- Don't know



Who are using E-Cigarettes?

- E-cigarettes are now the most commonly used tobacco product among youth.
- In the United States, youth are more likely than adults to use e-cigarettes.
- In 2016, more than 2 million U.S. middle and high school students used e-cigarettes in the past 30 days, including 4.3% of middle school students and 11.3% of high school students.⁸
- In 2016, 3.2% of U.S. adults were current e-cigarette users.⁹

(Centers for Disease Control and Prevention)



E-Cigarette users aged 18-24 years 40.0% had NEVER BEEN cigarette smokers

PA Statistics



- 1 in every 4 high school seniors in PA reported having used an e-cigarette in a 30 day period.
- PA is 10% higher than the national average.
- More teens used a e-cigarette in PA in 2015 versus cigarettes and smokeless tobacco.
- ***Must be 18 years old to purchase E-cigs in PA***



Big Business



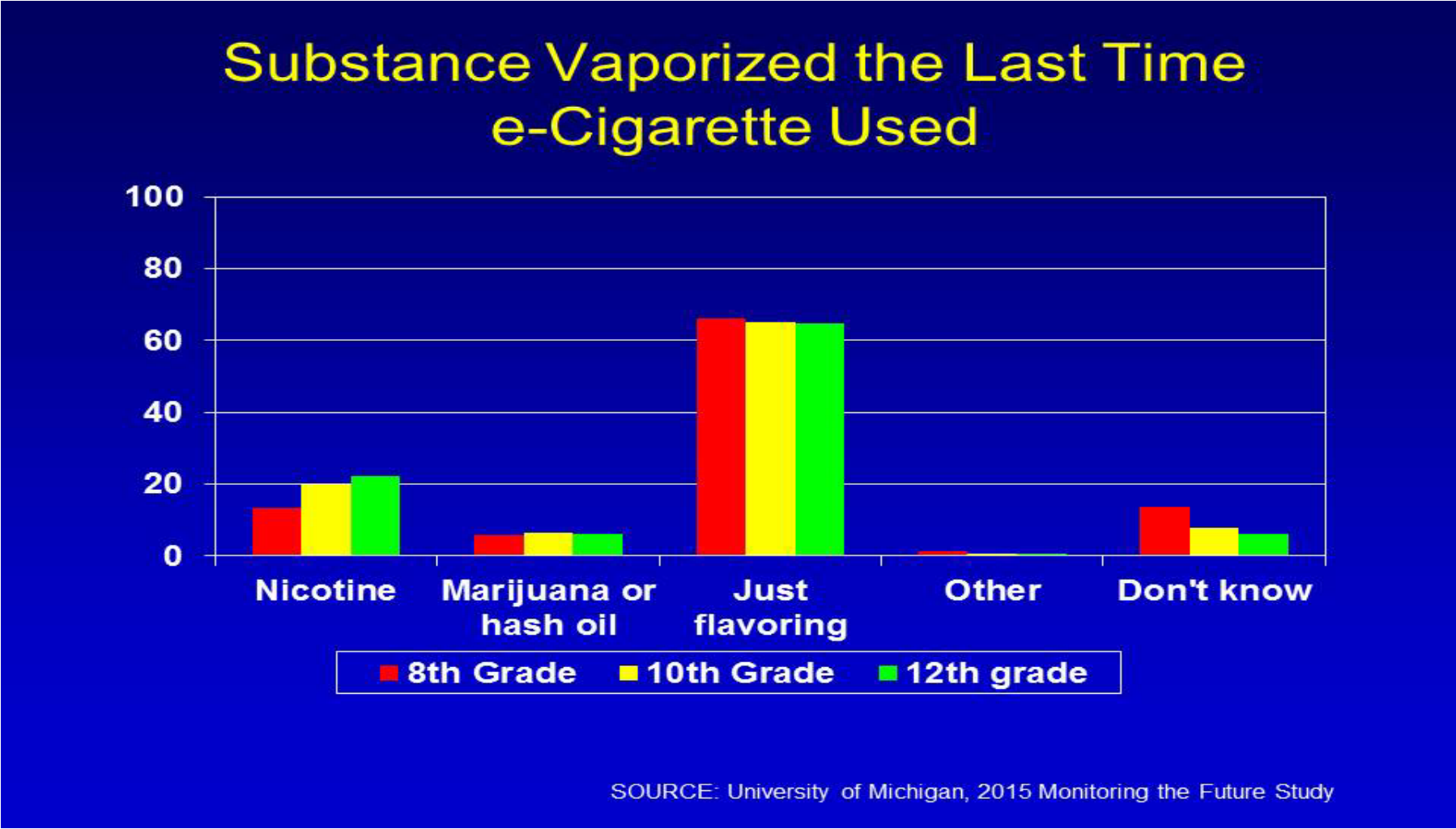
- E-cigarettes are a 2.5 billion dollar business in the US
- \$125 million annually to advertise E-cigarette products
- Marketed as a “safer & less toxic” as traditional cigarettes
- Very easy for youth to buy on-line: loose disclaimers



JUUL
SMOKING EVOLVED

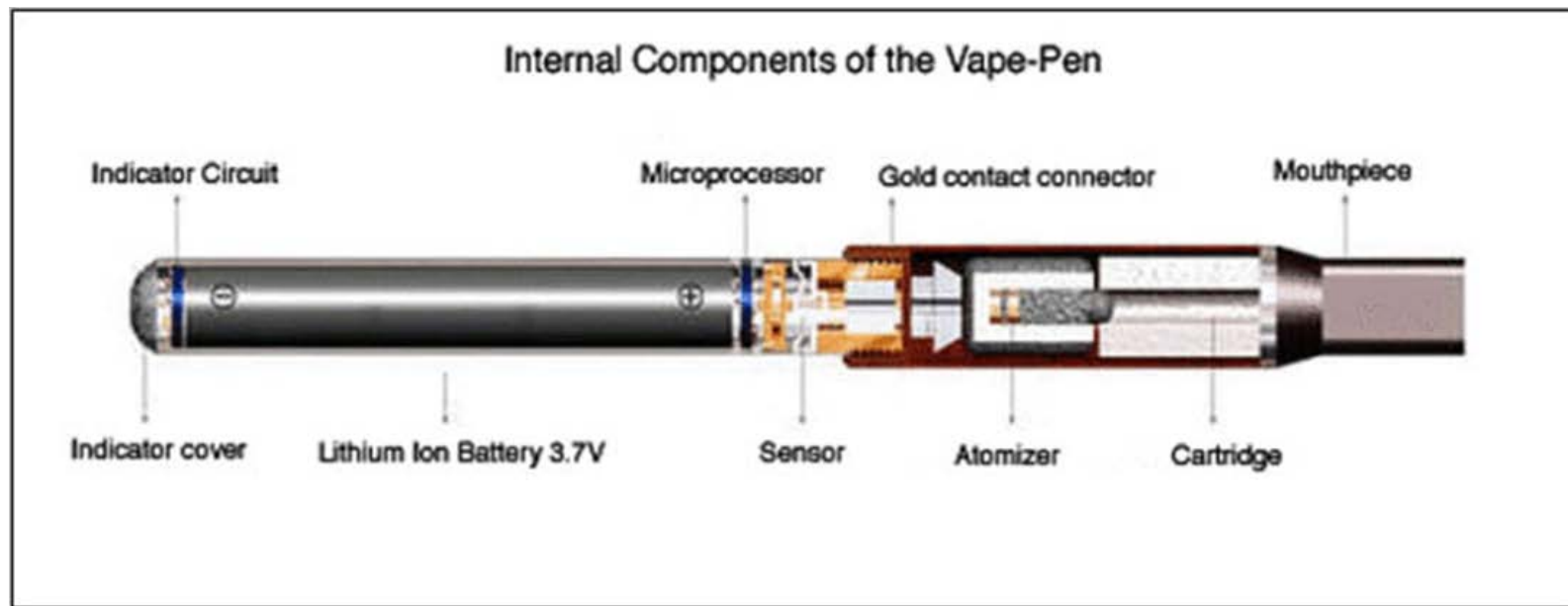


What are Pre-teens & Teens VAPING?



Vaping Devices:

- Electronic cigarette: smokeless, battery operated device used to deliver nicotine with flavorings or other chemicals to the lungs.
- Vaporizer pen or vape pen: a device ranging in size from a standard pen to a large cigar used to generate an inhalable vapor from a solid, semi-solid, or liquid substance.
- Three components: A liquid cartridge used to produce the vapor. A heating element known as the atomizer and a rechargeable battery to power the atomizer.



Creative names for e-cigarettes:

"cartridges"

"e-cigs"

"mods"

"carts"

"vapes"

"ank systems"

"water pipe"

"vape pipe/pen"

"Juul"



Note. Some e-cigs connect to other electronic devices to play music and answer calls

Juul E-cigarette

- Juul 54% of market share of E-cigarettes – contain nicotine
- Can purchase at local WAWA, 7 Eleven, & Shell stores
- Sells for \$49.99 for starter Packet
- Pack of 4 flavor pods sells for \$25.00



Starter Packet



Juul Pod
1 pod = 200 puffs



USB Charger

Hookah: *water pipes that are used to smoke specially made tobacco that come in different flavors*

- *In the US it has become more popular among teens and young adults and in college towns, seen as a “popular social activity”*
- *Even after it has been passed through water, the tobacco smoke in a hookah pipe contains high levels of cancer-causing chemicals*
- *Smoke inhaled in a typical one-hour hookah session can equal 100 cigarettes or more (WHO 2011)*



E-Liquid/E-Juice: Is it candy?

- Main ingredient: propylene glycol (PG) and/or vegetable glycerin (VG) usually with water-soluble food flavorings. With or without nicotine, THC
- Allergies to PG are rare, but it can irritate the lungs and eyes and may be more harmful to people with chronic lung diseases like asthma and emphysema.
- The FDA generally views both PG and VG as safe in food, drugs and cosmetics BUT there have not been sufficient scientific studies done on what the impact of inhaling them on a short or long term basis may be
- **It is not always clear what is in e-liquids**



“Harmless” Vapor: *Toxic chemicals are formed as the e-liquid heats up to make the aerosol that e-cig users inhale:*

AEROSOL COMPOSITION

- Propylene glycol
- glycerin
- Flavorings (many)
- **Nicotine**
- **NNN**
- **NNK**
- NAB
- NAT
- **Ethylbenzene**
- **Benzene**
- P,m, xylene
- **Toluene**
- **Acetaldehyde**
- **Formaldehyde**
- **Naphthalene**
- **Styrene**
- **Benzo(b)fluoranthene**
- Chlorobenzene
- **Crotonaldehyde**
- **Propionaldehyde**
- Benzaldehyde
- Valeric acid
- Hexanal
- Fluorine
- Anthracene
- Pyrene
- Acenaphthylene
- Acenaphthene
- Fluoranthene
- **Benz(a)anthracene**
- **Chrysene**
- Retene
- **Benzo(a)pyrene**
- **Indeno(1,2,3-cd)pyrene**
- Benzo(ghi)perylene
- **Acetone**
- **Acrolein**
- Silver
- **Nickel**
- Tin
- Sodium
- Strontium
- Barium
- Aluminum
- **Chromium**
- Boron
- Copper
- **Selenium**
- **Arsenic**
- **Cadmium**
- Silicon
- Lithium
- **Lead**
- Magnesium
- Manganese
- Potassium
- Titanium
- Zinc
- Zirconium
- Calcium
- Iron
- Sulfur
- Vanadium
- **Cobalt**
- Rhubidium

Compounds in **yellow** are from FDA 2012,
**Harmful and Potentially Harmful
Substances – Established List**

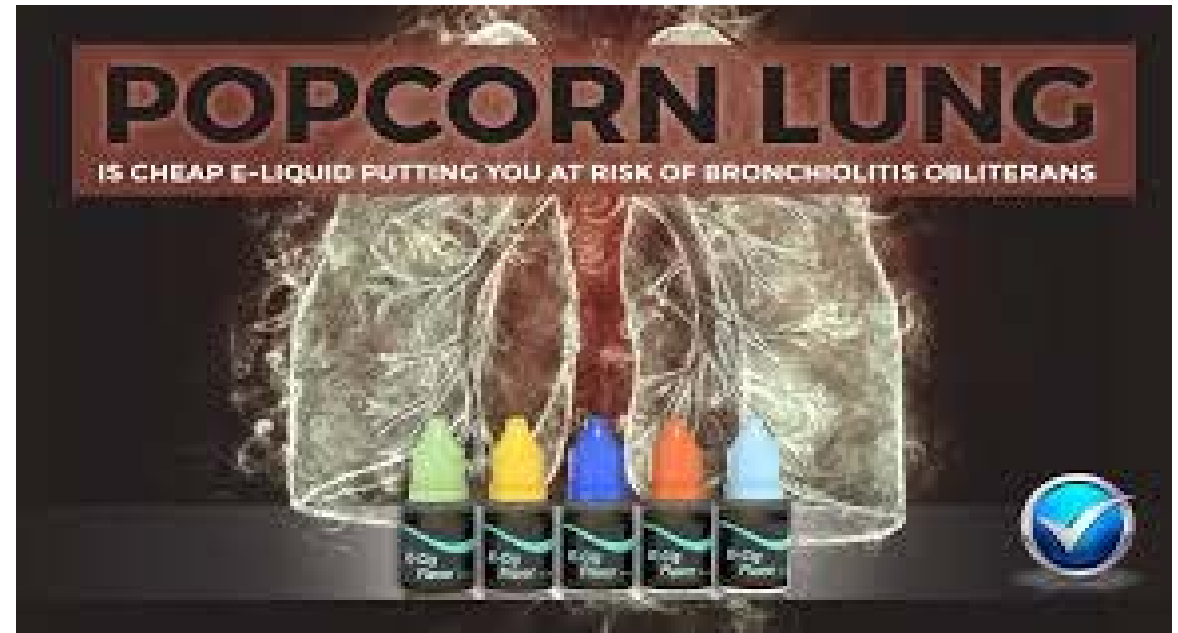
Are E-cigarettes less harmful than regular cigarettes?

- Yes—but that doesn't mean e-cigarettes are safe. E-cigarette aerosol generally contains fewer toxic chemicals than the [deadly mix of 7,000 chemicals in smoke from regular](#)
- E-cigarette aerosol is not harmless. It can contain harmful and potentially harmful substances, including nicotine, heavy metals like lead, volatile organic compounds, and cancer-causing agents



POPCORN LUNG ?

- Findings confirm the presence of diacetyl and “other flavoring chemicals” in e-juices
- Diacetyl is added to food to produce a buttery taste and is perfectly harmless when ingested this way. The issue is that when heated up and then inhaled diacetyl is not so benign
- Inhaling it over a long period may prove harmful to health, specifically being linked to bronchiolitis obliterans (a lung disease).
- Because of the associations between diacetyl and bronchiolitis obliterans and other severe respiratory diseases among workers inhaling heated vapors containing diacetyl, urgent action is recommended to further evaluate the extent of this new exposure to diacetyl and related flavoring compounds in e-cigarettes (CDC)



Nicotine

- *E-cigarettes can increase nicotine addiction among young people and may lead kids to try other tobacco products, including conventional cigarettes*
- *Teens don't always know how much nicotine they are inhaling*
- *“Nicotine High” – YES in higher concentrations*

eLiquid Nicotine Strength Guide



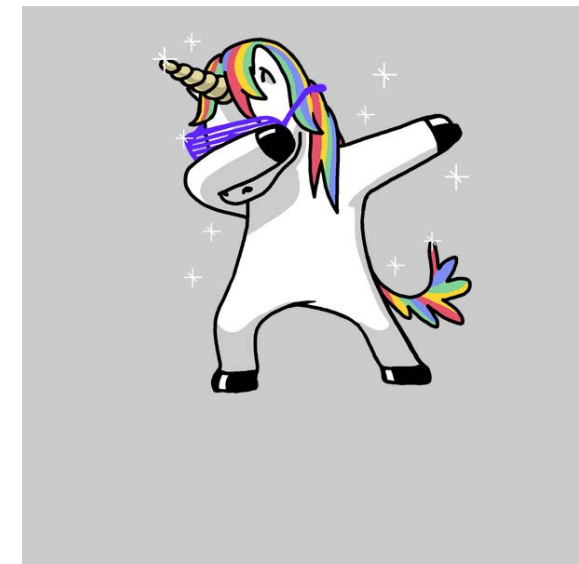
Vaping Marijuana(THC)

- THC(tetrahydrocannabinol) is the chemical responsible for most of marijuana's psychological effects(high)
- *Liquid THC is applied to a vaping device the same way that flavored nicotine liquid is*
- *Use of hash oil(higher concentrated THC), is becoming more common*



Dabbing: *not your typical fun "dance"...*

- *Dabbing* is a method used to convert marijuana into a concentrate.
- vaping highly concentrated doses of *cannabis* oil, is the next level of vaping *marijuana* for both recreational and medicinal purposes. But for vaping waxes, you need a special *vaporizer* known as a *wax vaporizer*
- *It uses butane, which is highly flammable, to extract THC from the cannabis plant*
- *Also known as butane hash oil (BHO), honey oil, budder, crumble, shatter and/or wax*
- *While marijuana in its traditional plant form has a THC concentration of about 20 percent, the wax used for dabbing can have a concentration of up to 80 percent*



Dripping:

a more labor-intensive method of vaping in which the user manually applies a few drops of liquid directly to the exposed heating coil of the e-cig every so few puffs

- 1 in 4 teens who vape say they've used this method
- Dripping produces thicker clouds of vapor, gives a stronger sensation in the throat and makes flavors taste better (Journal of Pediatrics)
- Dripping generates higher heating coil temperatures than conventional use of e-cigarettes, which lead to greater emissions of a class of harmful chemicals.
- Some chemicals released are associated with cancer, chronic obstructive pulmonary disease
- Handling liquid exposes teens to direct skin contact with nicotine which is absorbed rapidly through human skin



Alcohol Vaping(vapshot)

- When **alcohol** vapor is inhaled, it goes straight from the lungs to the brain and bloodstream, **getting** the individual **drunk** very quickly.
- *Rates of alcohol poisoning are much higher*
- *“Vaportini” or “Vapshot”*



Available on Amazon!!

The screenshot shows a web browser window displaying the Amazon product page for the Vape Shot Alcohol Vaporizing Spirit Pump. The browser's address bar shows the URL: <https://www.amazon.com/Vape-Shot-Alcohol-Vaporizing-Spirit/dp/>. The product title is "Vape Shot Alcohol Vaporizing Spirit Pump" with a 4.5-star rating from 36 customer reviews. The price is listed as \$19.99 plus \$4.62 shipping. The product is in stock and sold by V Tech LLC. A prominent yellow "Add to Cart" button is visible. The product image shows a black and purple device with the "Vape Shot" logo. The Windows taskbar at the bottom shows the time as 11:21 AM on 5/9/2018.

Amazon.com | Va... x 1 in 4 U.S. Adults, 1 i... dab pen weed - Go...

Home & Kitchen - Kitchen & Dining - Dining & Entertaining - Glassware & Drinkware

Vape Shot
Vape Shot Alcohol Vaporizing Spirit Pump
★★★★☆ 36 customer reviews
| 6 answered questions

Price: \$19.99 + \$4.62 shipping
In Stock.
Get it as soon as May 15 - 18 when you choose **Standard Shipping** at checkout.
Ships from and sold by V Tech LLC.

- New refreshing way to enjoy mix drinks and shots with 0 calories and NO hangover!!!
- VAPESHOT brings out the real aroma and flavor of desire spirit
- Unique tip design allows using it with any bottle(18-30mm)
- !!!WATCH VIDEO!!!
<https://www.youtube.com/watch?v=RunfcAr6e0Q>

Share [Email] [Facebook] [Twitter] [Pinterest]

Qty: 1 [Dropdown]

\$19.99 + \$4.62 shipping
In Stock. Sold by V Tech LLC

[Add to Cart]

Turn on 1-Click ordering for this browser

Deliver to brynmawr 19010

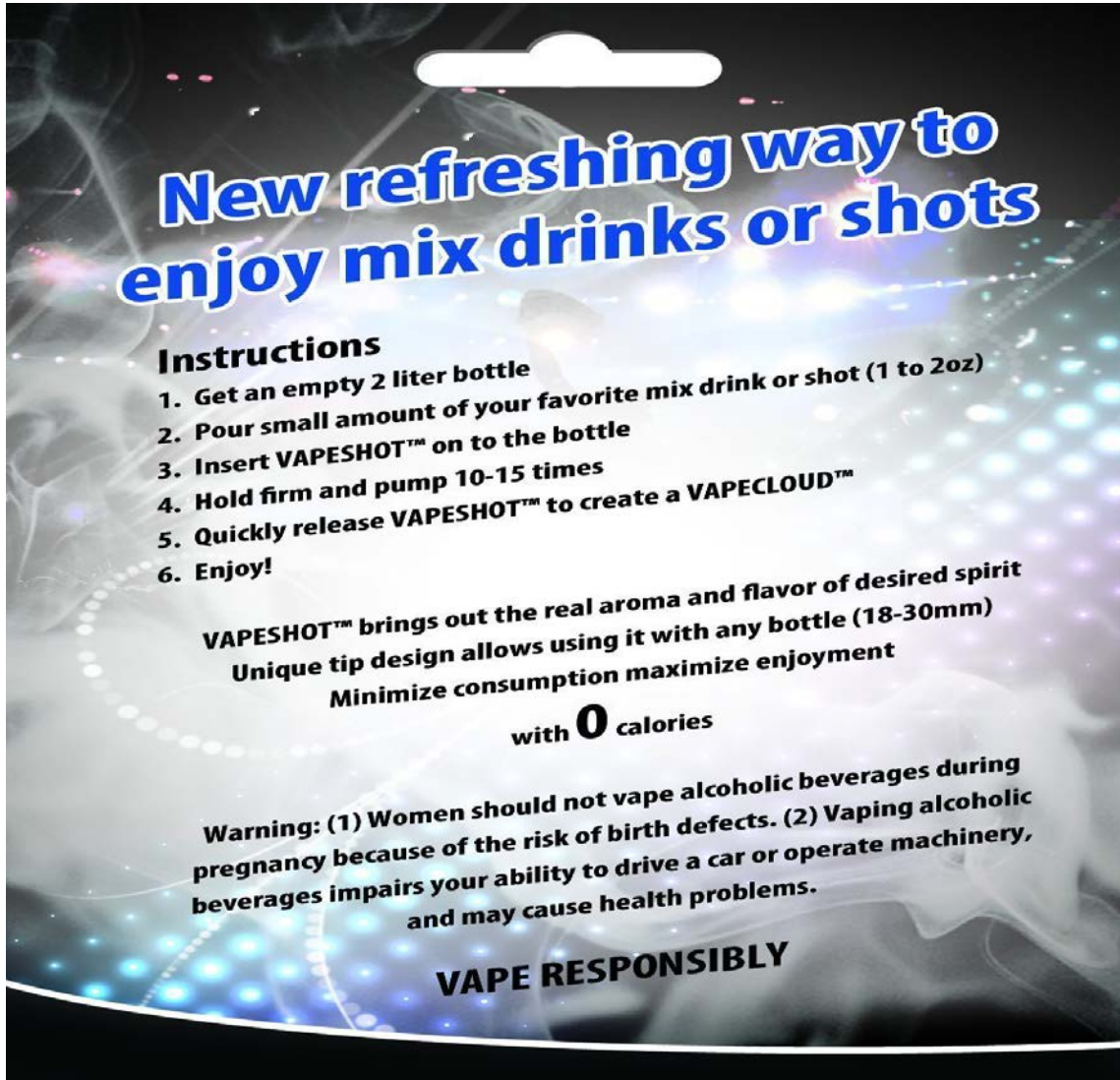
Add to List

Add to Wedding Registry

Have one to sell? [Sell on Amazon]

Windows Taskbar: 11:21 AM 5/9/2018

Alcohol Vaping...Not a “real” soda bottle



New refreshing way to enjoy mix drinks or shots

Instructions

1. Get an empty 2 liter bottle
2. Pour small amount of your favorite mix drink or shot (1 to 2oz)
3. Insert VAPESHOT™ on to the bottle
4. Hold firm and pump 10-15 times
5. Quickly release VAPESHOT™ to create a VAPECLOUD™
6. Enjoy!

VAPESHOT™ brings out the real aroma and flavor of desired spirit
Unique tip design allows using it with any bottle (18-30mm)
Minimize consumption maximize enjoyment
with **0** calories

Warning: (1) Women should not vape alcoholic beverages during pregnancy because of the risk of birth defects. (2) Vaping alcoholic beverages impairs your ability to drive a car or operate machinery, and may cause health problems.

VAPE RESPONSIBLY



Dangers of E-Cigarettes



- 3 times more likely to have dangerous chemicals in their systems
- 2 times as likely to start smoking traditional cigarettes
- Nicotine in E-Cigarettes places teens at risk for:
 - Altered brain development
 - Mood disorders
 - Lowered impulse control
 - Attention & learning problems
- Defective batteries have caused fires & explosion – injuries

Dangers of Vaping to Youth

- Second hand smoke dangers? Still unknown
- Most popular and commonly used by youth
- Appealing flavors; peach schnapps, Pina colada, peppermint, bubble gum, chocolate etc....
- More likely to convert to traditional cigarette smoking in the future
- May lead to vaping marijuana, herbs, wax and oils



Is there a Risk of Poisoning?



- Contact of liquid nicotine on skin or swallowed = can poison
- Nicotine liquid is lethal in small amounts if swallowed: < 1 tsp
- 2016 Law required that liquid nicotine must be sold in child-proof packaging
- Signs & symptoms of nicotine poisoning:
 - Sweating, dizziness, & vomiting
 - increased heart rate(pulse)
 - sleepiness
 - seizures
 - difficulty breathing



E-liquid



E-liquid



E-liquid



Food product



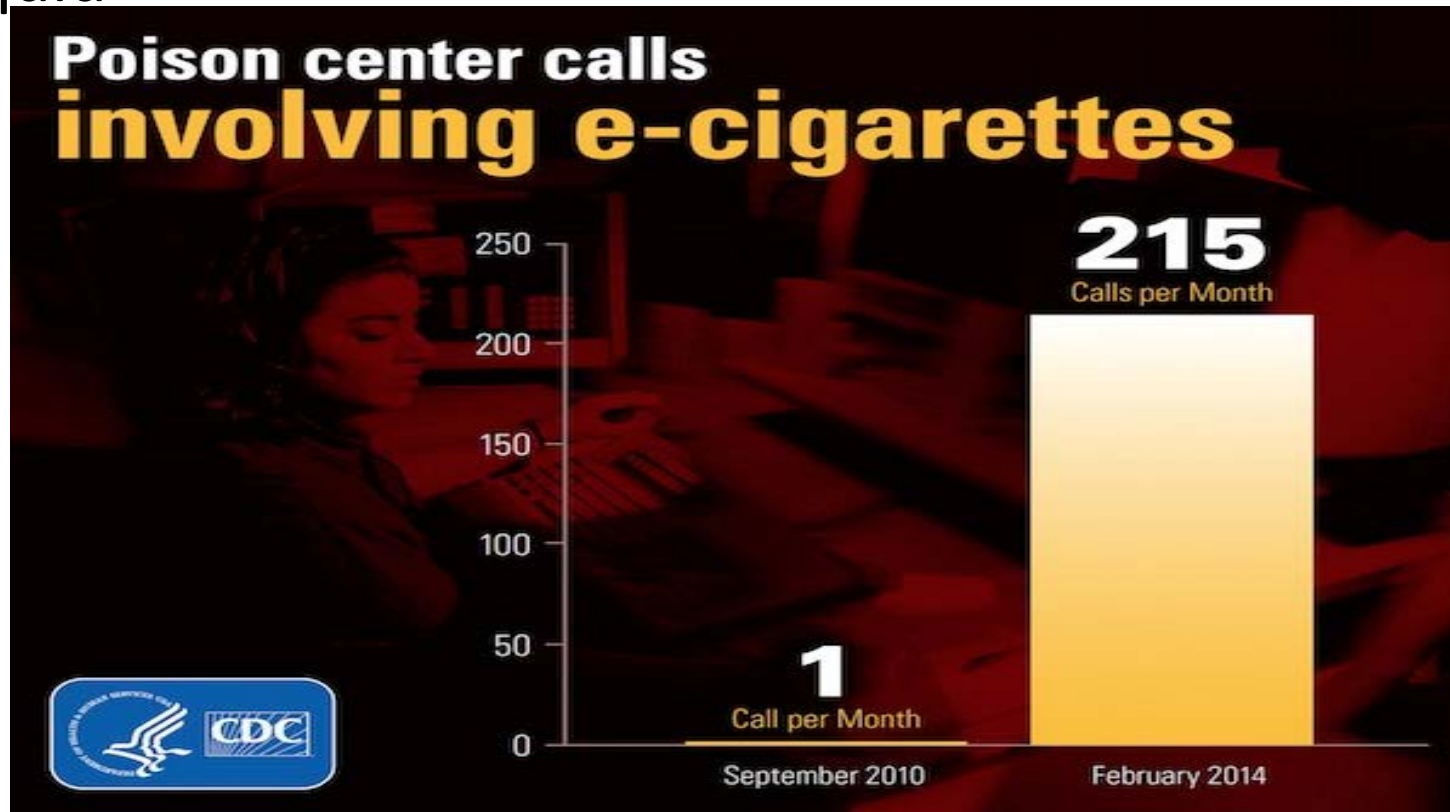
Food product



Food product

Additional Dangers of E-Cigarettes

Acute nicotine exposure can be toxic- children & adults have been poisoned by swallowing, breathing or absorbing e-cigarette liquid



What's the bottom line?

- E-cigarettes have the potential to benefit adult smokers who are not pregnant if used as a complete substitute for regular cigarettes and other smoked tobacco products.
- E-cigarettes are not safe for youth, young adults, pregnant women, or adults who do not currently use tobacco products.
- While e-cigarettes have the potential to benefit some people and harm others, scientists still have a lot to learn about whether e-cigarettes are effective for quitting smoking.
- If you've never smoked or used other tobacco products or e-cigarettes, don't start.
- E-cigarettes are not currently approved by the FDA as a quit smoking aid.
- Additional research can help understand long-term health effects.



What is Radnor School District doing?

- Added new rules regarding vaping to the student handbook
 - *Possession or use of all cigarettes, electronic smoking products, (including vaporizers, e-cigarettes, liquids, etc.) or tobacco products on school grounds or on school vehicles.*
 - *The possession and/or use of tobacco products of any kind including vaporizers, e-cigarettes and liquids are a health and safety hazard for the user and others. Additionally, it is a violation of School District Policy #222 which prohibits the use of tobacco or electronic smoking products on school grounds and in school buildings. Therefore, the use and possession of all tobacco and electronic smoking products is prohibited on campus. Students who violate this policy will be fined \$50.00, will be assigned one B detention, and will lose free periods and Open Campus, the student will be placed in study hall for a minimum of twenty (20) school days.*
- Referral of students to “Caron” Treatment Center to facilitate smoking cessation classes for Radnor students.

What is Radnor School District doing?



- Speaker from Caron Treatment Center speak to 8th, 9th & 10th graders on dangers of vaping
- Over-head morning announcements at HS on vaping dangers
- Held a nicotine cessation workshop over 6 weeks this spring
 - Education
 - Quitting
 - Coping skills
 - Open to all students and mandatory for those caught vaping

Posted on Radnor High School campus

VAPING. Don't Get Taken In.

Ads claim e-cigarettes emit only harmless water vapor. NOT true!

PROPYLENE GLYCOL

Commonly used in theatrical fog, it is considered safe when ingested, but there is concern about long-term health effects when inhaled.

LEAD

Found in car batteries, it is highly toxic and has been found in e-liquid products. Lead poisoning stunts growth, causes brain and kidney damage and damages the brain.

ACETALDEHYDE

Commonly found in cigarette smoke, it irritates the skin, eyes, nose, mouth, throat, and respiratory tract.

FORMALDEHYDE

Employers use it to preserve dead bodies. It causes cancer and can damage your lungs, skin and digestive system.

TOLUENE

Commonly used ingredient in paint thinner, it is highly toxic. Exposure to even low levels can cause headaches, nausea and sweating.

CADMIUM

Commonly used in batteries, it causes damage to the liver, kidneys and brain and stays in the body for years.

ACETONE

Commonly used in nail polish remover, it can irritate the eyes and may depress the central nervous system.

ACROLEIN

Used as an herbicide to control weeds and algae, it is a toxic irritant for skin, eye and nasal passages.

NICKEL

Commonly used in stainless steel, magnets and batteries, it causes cancer and can damage your lungs and immune system.

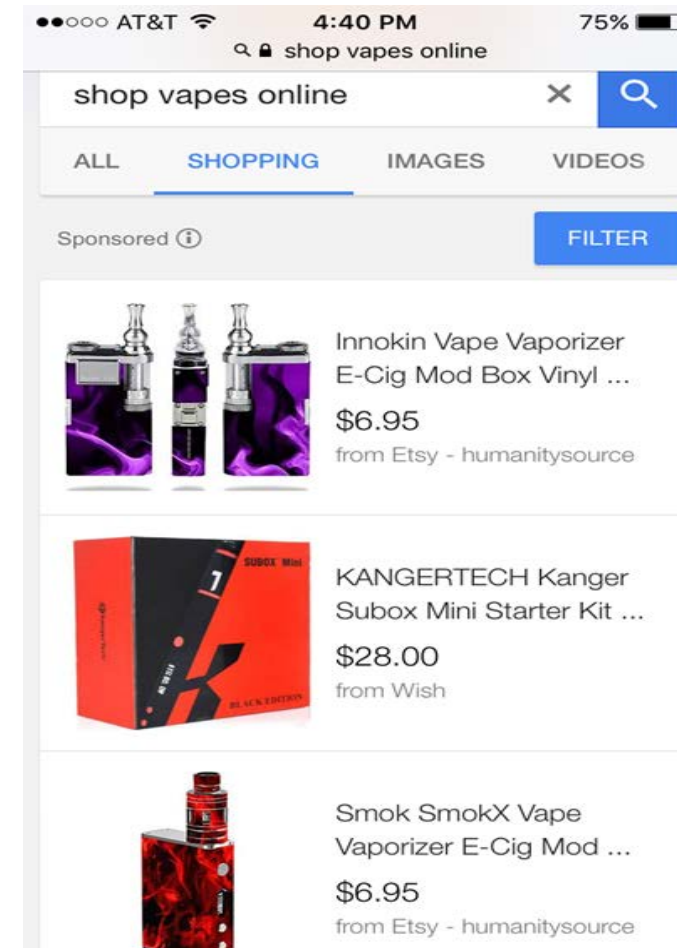
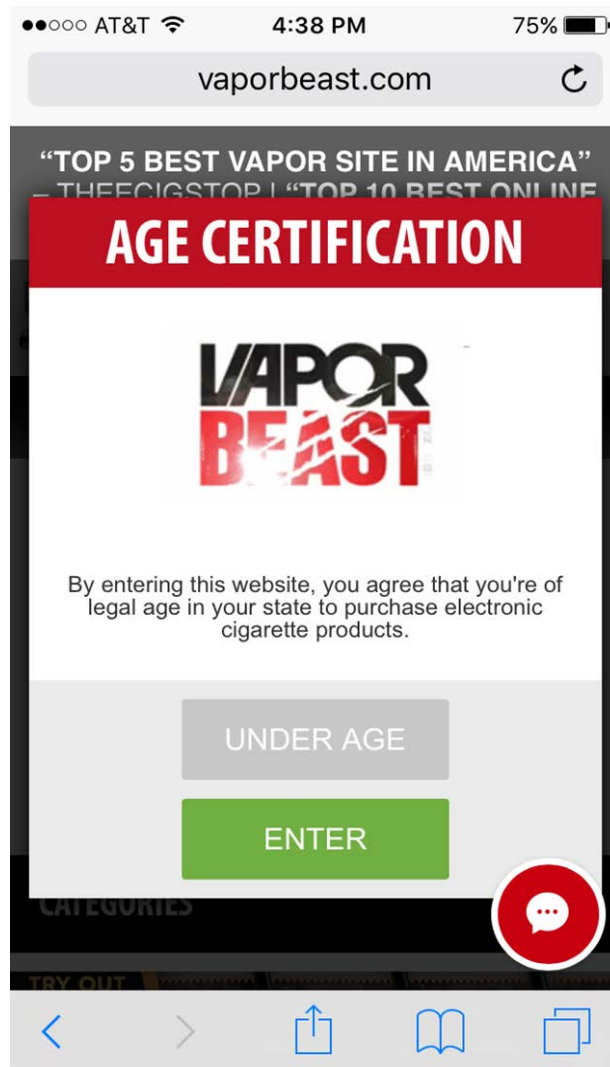
LIQUID NICOTINE

The most dangerous part of an e-cigarette might be the liquid nicotine. It is highly addictive and toxic. Even small amounts of liquid nicotine absorbed through the skin or swallowed can cause vomiting and seizures, and could be fatal for a child. The stuff contains aren't childproof AND "e-juice" comes in candy flavors and bright colors that look like you're going to love it.

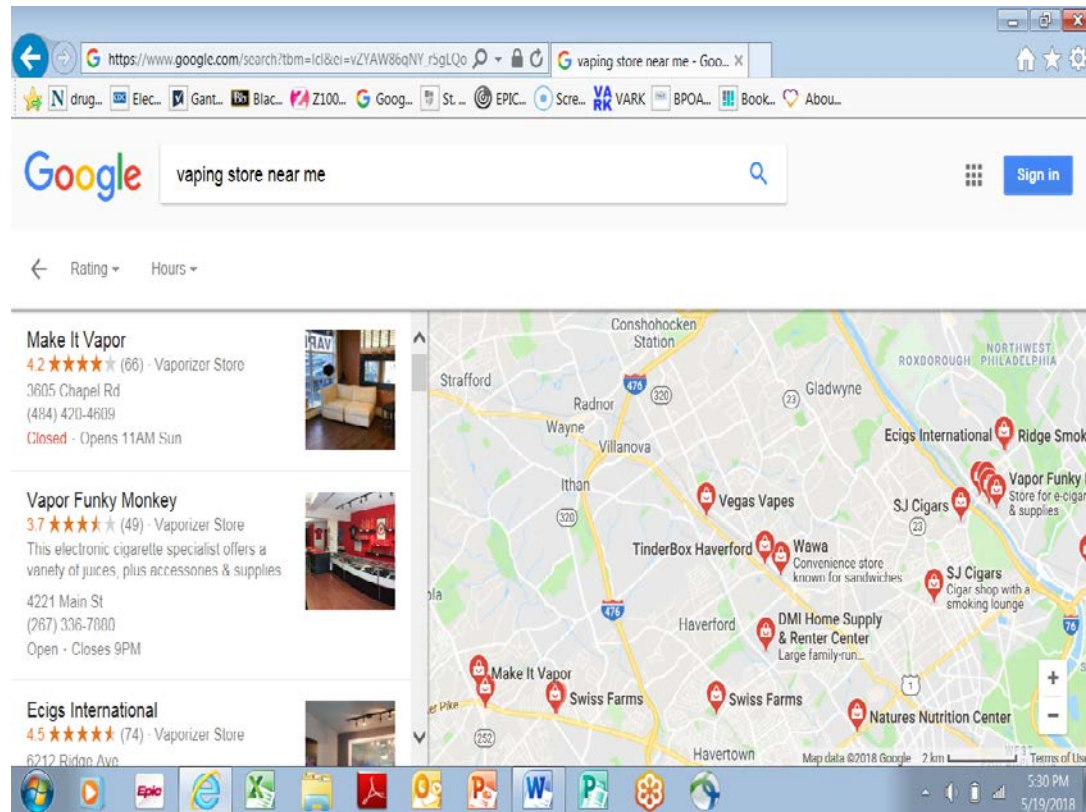
Though e-cigarette aerosol has lower levels of toxins than cigarette smoke, it still contains nicotine, ultrafine particles of toxic chemicals and some known carcinogens. When inhaled it heats propylene glycol or glycerine-based solution. Nobody knows how these affect your health long-term.

The products shown contain chemicals found in cigarettes. The products themselves are not added to e-cigarettes and are used for illustrative purposes only.

How do teens get Vapes and how much do they cost?



Where do teens get Vapes in our community?



- AM PM Wayne
- Wawa Wayne
- Vegas Vapes Bryn Mawr
- Online....iPhone/Droid

E-cigs and schools

- *Products that look like pens or highlighters can easily be hidden by students in schools and classrooms*
- *Teachers may not recognize e-cigs, and smoke detectors won't catch the aerosol*
- *There is no odor or can smell like chocolate etc....*



Signs to look for

It can be hard for parents to tell if their child/teen is vaping, since there's no smoke or telltale smell.



- *"Pens" that aren't pens*
- *New scents: the vapor can be flavored (fruit punch, bubble gum)*
- *Typical signs of marijuana use: red eyes, lethargic, increase cravings for snacks, confusion, anxiety, lack of focus/coordination, unusually talkative, dropping studies or usual activities, change of friends, and/or secretiveness*
- *Increase of water intake: Propylene glycol attracts and holds water molecules from its environment. This can lead e-cig users to have a constant state of dry mouth.*
- *Some e-cig users develop a sensitivity to caffeine, and curb their caffeine intake*
- *Nose bleeds. The water-holding effect of e-cig vapor can also dry out the nasal passages*
- *Containers of butane*

Talk to your child/teen....

- *As a parent, you have the power to influence your teen's decisions. Many parents don't talk to their kids about drugs, addiction, smoking or drinking, but for those who do, the results are positive.*
- *Teens whose parents talk to them about these difficult subjects make better choices*
- *When talking about vaping, play it casual. Ask them if they have heard of it and what they know.*
- *Keep it open-ended. Teenagers will look for any chance to answer a question with a yes or no. What do you think about vaping?*
- *Today's teens are more health-savvy. Teach your teen about e-cigarettes and regular cigarettes.*
- *Talk about the uncertainty of e-cigarette safety and about the definite possibility of addiction to nicotine that goes along with vaping*
- *Stress the seriousness of vaping as a decision to not just make on a whim, but one with potential consequences of lifelong problems*
- *Be the message. If you don't want your kids to vape, don't vape, either.*
- *Children of people that use products like vaping and nicotine products are more likely*



Radnor Township Police Department

Narcotics Unit

Delaware County CID Narcotics Task Force



- **Superintendent William Colarulo**
- **Deputy Superintendent Christopher Flanagan**
- **Lieutenant Shawn Dietrich**
- In 2012 we created a four person Drug Task Force Unit
- The team is comprised of one Supervisor and 3 officers to help combat issues related to drugs and Radnor Township. These officers identities remain confidential for their safety!

Marijuana Concentrates (Oil / Wax)



- Produced by extracting THC (Tetrahydrocannabinol) directly from the Marijuana bud(s).
- Contains high THC levels, ranging from 40% to 80%.
 - Can be up to 4x stronger than high grade Marijuana, which usually measures around 20% THC.
- Comes in oil or wax form.
- Usually in an amber color, in solid or a thick liquid form

Marijuana Concentrates Production



- Carbon Dioxide, Ethanol (Alcohol) and Butane can be used during the extraction process.
- The above methods are used to extract the THC from the Marijuana “bud”, which after being filtered and heated will produce the final Marijuana concentrate.
 - There are numerous websites and Youtube.com videos which demonstrate in detail how to produce Marijuana concentrates.
 - Generally around seven (7) grams of Marijuana buds (1/4 oz) will produce around one (1) gram of Marijuana concentrate.
- Side effects from the use of butane Hash Oil can include:
 - Dizziness, paranoia, hallucinations, impaired judgement, slowed speech, reduced coordination, etc.

Marijuana Concentrates Paraphernalia



- Items related to the production and/or ingestion of Marijuana concentrates are:
 - Hot plates, rice cookers, alcohol, wax paper, syringes and small glass jars.
 - Vaporizers (vape(s) / “pens”, “carts”), bong and pipes.
- Slang terms for Marijuana concentrates include:
 - Wax, shatter, oil, budder, dabs, dabbing







References:

- vaping: <https://resource.echalk.com/fl/N00bjl4c> PowerPoint available on our web site. MS/HS will continue with lessons on *vaping* in health classes. HS/MS Faculty presentations. HS school-wide presentation ...
- NIH: National Institute on Drug Abuse: Electronic Cigarettes (E-cigarettes)
- CDC: E-Cigarettes
- U.S. Department of Health and Human Services: E-Cigarettes Use Among Youth and Young Adults
- Center for Addiction: <https://www.centeronaddiction.org/e-cigarettes/about-e-cigarettes>
- www.media.pa.gov/Wolf Administration Discusses Dangers of E-Cigarettes with Students
- Caron to facilitate smoking cessation classes for Radnor students: Morresi@caron.org