

The Truth about E-Cigarettes and Vaping

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PEDIATRICS



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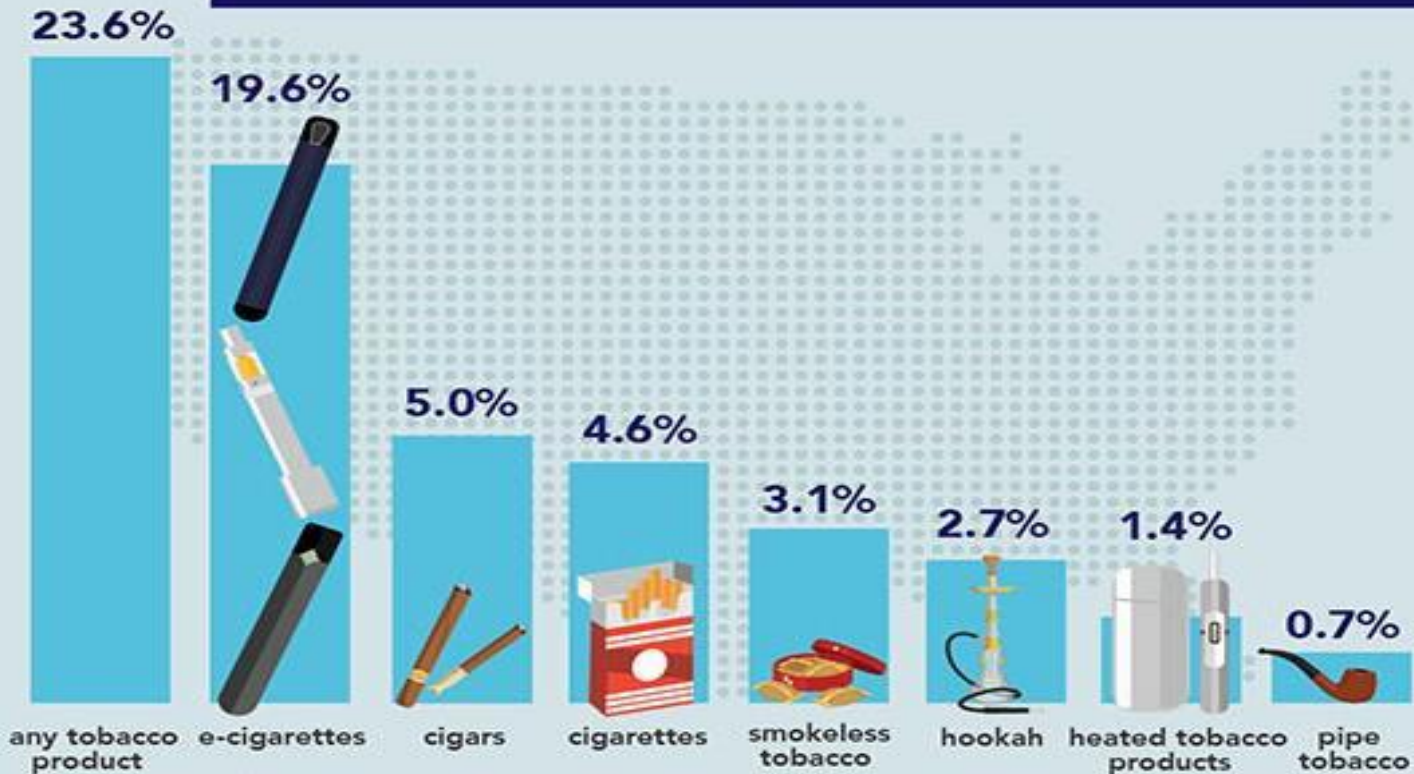
Objectives

1. State current vaping statistics among teens and young adults
2. Provide e-cigarette overview
3. List the harms of e-cigarette ingredients
4. Recognize the risk of addiction
5. Define ways to help students and families
6. Identify resources available

Tobacco Prevention and Control



CURRENT TOBACCO PRODUCT USE AMONG HIGH SCHOOL STUDENTS

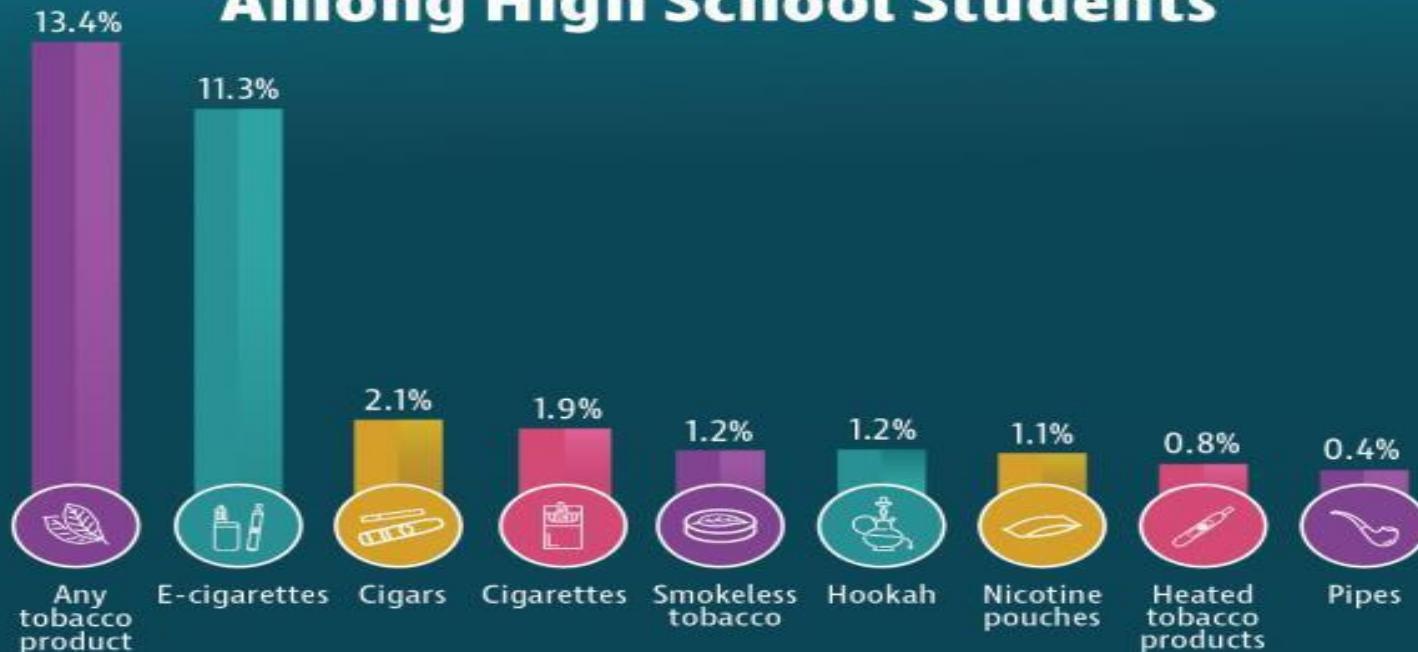


Learn more at: bit.ly/6950a1

Source: National Youth Tobacco Survey, 2020



Current Tobacco Product Use Among High School Students



Learn more: go.usa.gov/xzkK2

Source: National Youth Tobacco Survey, 2021



[CDC.gov/quit](https://www.cdc.gov/quit)

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**NYTS
2021**

This year's **data cannot be compared to previous surveys** due to changes made this year to conduct the survey during the COVID-19 pandemic.

More than **2 million**
U.S. youth currently use **e-cigarettes**

11.3%

of high school students

2.8%

of middle school students

Among youth who are current e-cigarette users:

About
2 in 5
use
e-cigs
frequently

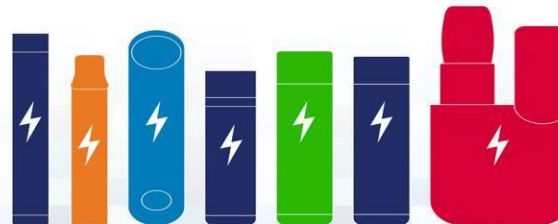


About
1 in 4
use
e-cigs
daily

Disturbingly high rates of frequent and daily e-cig use suggest many teens have a

**STRONG
DEPENDENCE ON
NICOTINE**

Nearly **85%** use
flavored e-cigs



Electronic nicotine delivery systems (ENDS) products, like e-cigarettes, that are so popular with young people, remain an **ONGOING CONCERN**.

FDA protects children's health by:

- Requiring tobacco products to meet public health standards before they can be marketed
- Prioritizing enforcement against youth-appealing products
- Educating the public, especially youth, about the dangers of e-cigarette use

CENTER FOR TOBACCO PRODUCTS

Note: All numbers presented here are estimates. Source: Park-Lee E, Ren C, Sawley MD, et al. Notes from the Field: E-Cigarette Use Among Middle and High School Students - National Youth Tobacco Survey, United States.

www.fda.gov/tobacco

[@FDATobacco](https://twitter.com/FDATobacco)

facebook.com/fda



FDA

NYTS
2022

More than **2.5 million**
high and middle school students currently use e-cigarettes.

Among current youth e-cigarette users:

More than **1 in 4**



use e-cigarettes daily

The most commonly
used device type is
disposables



Almost
85%

use flavored e-cigarettes



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In October 2022, FDA and Centers for Disease Control and Prevention (CDC) released federal data from the 2022 National Youth Tobacco Survey (NYTS) on e-cigarette use among U.S. youth in the [Morbidity & Mortality Weekly Report “Notes from the Field: E-cigarette Use Among Middle and High School Students — United States, 2022.”](#) [E-cigarette use among youth remains a top concern for the FDA. In 2022, about 1 in 10 or more than 2.5 million U.S. middle and high school students currently used e-cigarettes \(past 30-day\).](#)

Current Use

- 14.1% (2.14 million) of high school students and 3.3% (380,000) of middle school students reported current e-cigarette use.

Flavored E-Cigarette Use

- Overwhelmingly, current users (nearly 85%) used flavored e-cigarettes, with fruit flavors being the most popular, followed by candy, desserts, or other sweets.

Frequency of Use

- More than a quarter (27.6%) of current youth e-cigarette users use an e-cigarette product every day.
- More than 4 in 10 youth e-cigarette users report using e-cigarettes at least 20 of the last 30 days.

Type of Device

- The most commonly used device among current users was disposables (55.3%), followed by prefilled/refillable pods or cartridges (25.2%).

Commonly Used Brands

- Current users reported their usual brands as: Puff Bar (14.5%), Vuse (12.5%), Hyde (5.5%) and SMOK (4%).

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**Real Friends
Real Talk**



What is Vaping?

Vaping is the act of using an electronic cigarette, also called:

- Vapes
- E-hookahs
- Vape pens
- Tank systems
- Box Mods
- Electronic nicotine delivery systems (ENDS)



Image credit: FDA.gov

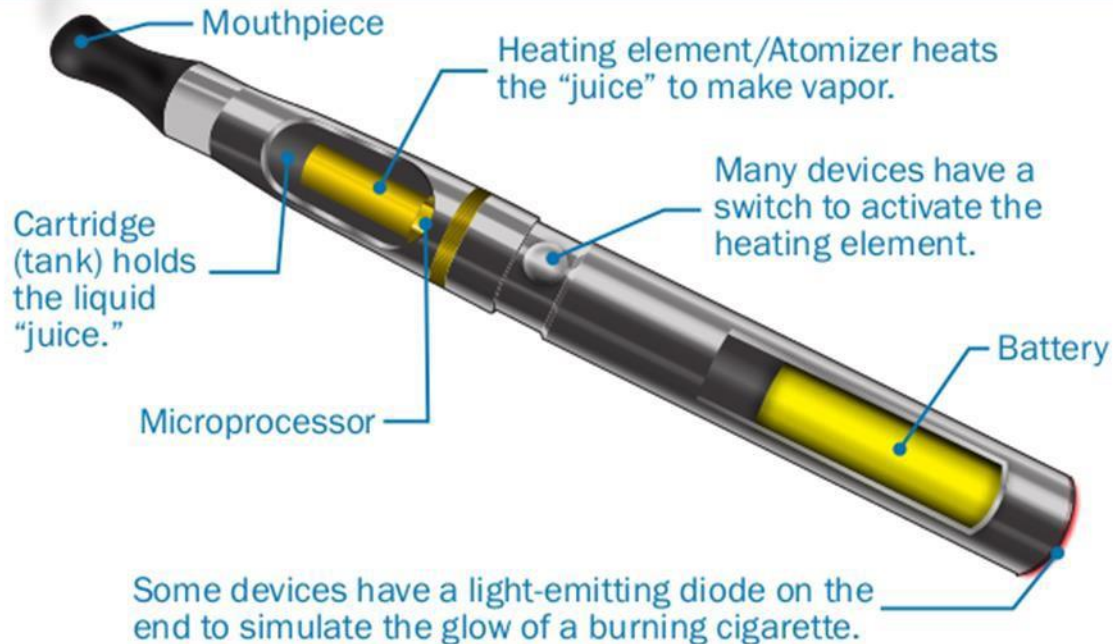
What Are Electronic Cigarettes?

- Battery operated device turning a liquid into an aerosol to inhale
- Invented in 2003 by a Chinese inventor
- Introduced to the United States in the mid-2000s
- Wide variation in look, design, and function



How Does Vaping Work?

Parts of an Electronic Cigarette



What is in E-Cigarette Aerosol?

E-Cigarette aerosol is not just harmless 'water vapor'

- Harmful chemicals are inhaled by the user and exhaled as secondhand aerosol
- Manufacturing of e-liquid is not regulated
 - 'Zero Percent' solutions can still contain nicotine
 - Unknown chemicals used during manufacturing

What's in that Pod?

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- Nicotine
- Benzoic Acid
- Glycerol
- Propylene Glycol
- Natural Oils
- Extracts and Flavors
- ???

What's in that Pod?

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- **Nicotine** Thymol Ally Hexanoate α -Pinene β -Pinene
Limonene Caffeine 2-methoxyphenol 2,3,5-Trimethyl pyrazine
- **Benzoic Acid** 2,5-dimethyl pyrazine Isopulegol Ethyl Maltol
Benzaldehyde 4-Terpineol Maltol Hydrocoumarin Vanillin
- **Glycerol** Phenethyl Alcohol P-Cymene Corylone Ethyl Vanillin
p-Anisaldehyde Eucalyptol Piperitone Piperonal Linalool
- **Propylene Glycol** β -Damascone Benzaldehyde PG acetal Pulegone
Ethyl anthranilate α -Terpineol δ -Decalactone γ -Octalactone
- **Natural Oils** 3-Hexen-1-ol β -Myrcene δ -Dodecalactone
Ethyl lactate γ -Decalactone Ethyl Acetate Ethyl butanoate
- **Extracts and Flavors** δ -Undecalatone Hexyl acetate
Ethyl hexanoate Ethyl 2-methylbutanoate Acetylpyrazine
- **???** Menthol Triacetin Carvone Neomenthol Benzyl Alcohol
p-Methone Hydroxyacetone Styralyl Acetate Menthyl Acetate
Strawberry Glycidate_A Heliotropine PG acetal Benzyl DMC butyrate
 γ -Terpinene Methyl Anthranilate Ethyl Isovalerate

E-Cig = E.N.D.S. Electronic Nicotine Delivery System

IN THE U.S.,
YOUTH ARE
MORE LIKELY
THAN ADULTS
TO USE
E-CIGARETTES



85% used
flavored e-cigs
in the past
month

2.5 MILLION

U.S. middle and high school
students used e-cigarettes in
the past 30 days, including:

**19.4% of high
schoolers**



Young ppl using e-cigs
are 4x more likely to
start smoking

Teens try vaping out of curiosity,
because their friends vape, and to
relieve stress.

Variety of Shapes and Styles

“Closed Systems”

“Refillable Open Systems”

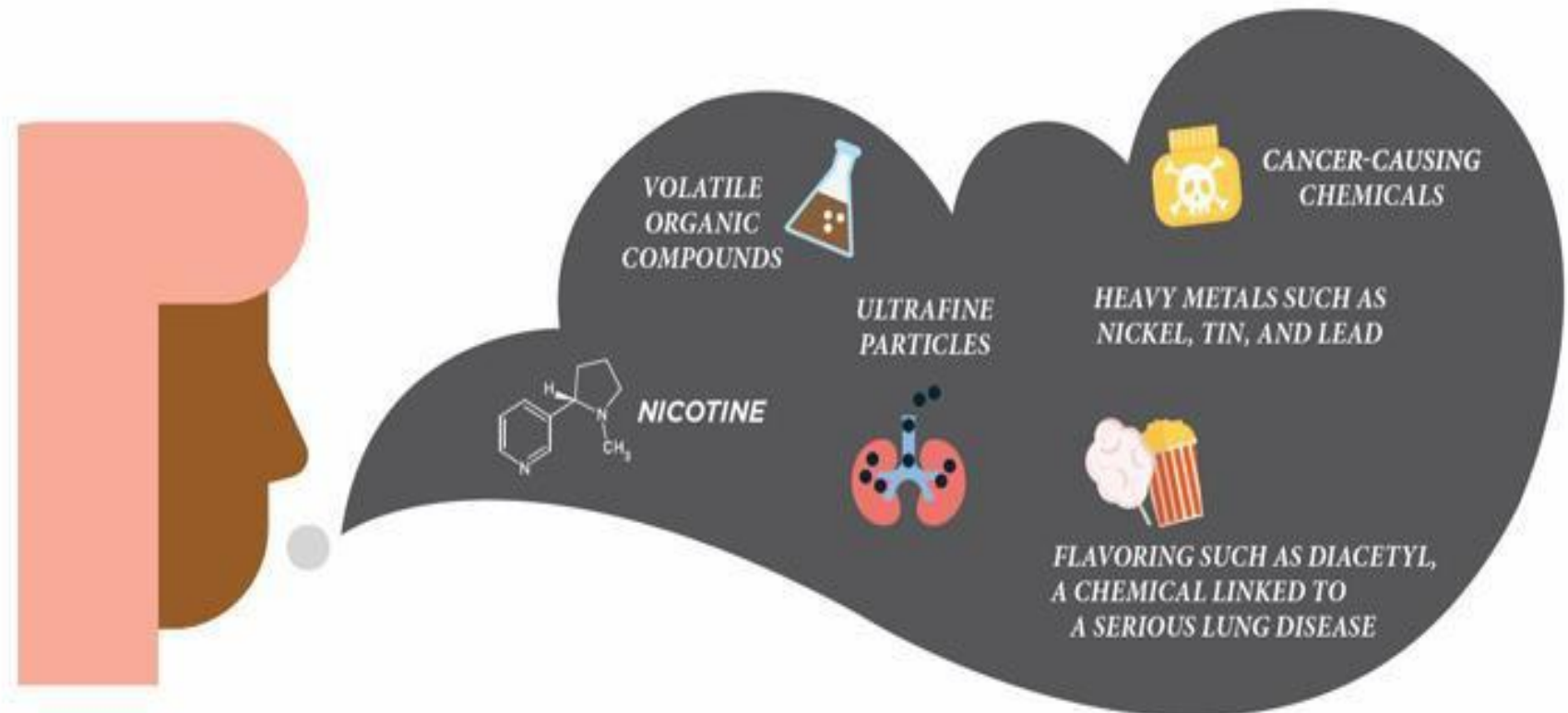


Sample of e-cigarette products. Images are not to scale.
Image credit: Campaign for Tobacco Free Kids



Not a Safe Alternative to Smoking

E-cigarettes contain cancer-causing chemicals that can also be inhaled by non-users.



#JUUL LIES

“I hope there was nothing that we did that made it appealing to them.”

—Juul CEO Kevin Burns,
on what he would say to parents of
teens addicted to Juul.

JUUL ADS CLEARLY FEATURED YOUNG PEOPLE
JUUL USED SOCIAL MEDIA INFLUENCERS TO ATTRACT YOUTH



Disposable E-cigarettes

- Flavors still being sold in disposable devices
- Puff Bar, Kang Vape, Bidi, Stig, Elf Bar, and Hyde are among popular disposable brand names
- Come pre-charged and pre-filled
- E-Cigarettes can be used to deliver marijuana and other drugs
- Contain high amounts of nicotine
- All salt-based e-juice liquid contains nicotine



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1 Pack of Cigarettes
≈ 20 mg of nicotine

1 JUUL pod
≈ 413 mg of nicotine

1 Puff bar
≈ 50 mg of nicotine

1 Suorin pod
≈ 90 mg of nicotine

ALL PODS CONTAIN HIGH LEVELS OF NICOTINE

TOBACCO PREVENTION TOOLKIT

= 20
CIGARETTES

≈ 41
CIGARETTES

≈ 50
CIGARETTES

≈ 90
CIGARETTES



E-Cigarette (E-Juice) Solutions

- Different concentrations of nicotine in E-liquids
- Different flavors, often dessert and candy flavored
- Challenges with FDA regulation and state and local enforcement



Image credit: Reuters/Arriana McIymore;
TobaccoFreeKids.org

Advertising Looks Like Kid-Friendly Products 15,000+ flavors



Image credit: TobaccoStopsWithMe.com

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More than 7,700 flavors of e-cigarettes exist, including fruit and sweet flavors that appeal to children and youth.



It is not safe to use e-cigarettes near children: There are cancer-causing chemicals in the exhaled e-cigarette vapor.



Minors can easily purchase e-cigarettes online, or - in some states - at convenience stores.

E-cigarettes: A Threat to Health

The American Academy of Pediatrics believes e-cigarettes and other electronic nicotine delivery systems are a significant danger to the health of children and nonsmokers. For more information, visit bitly.com/AAPpolicy.



Less than half a teaspoon of a nicotine-containing e-cigarette solution can be fatal to the average toddler.



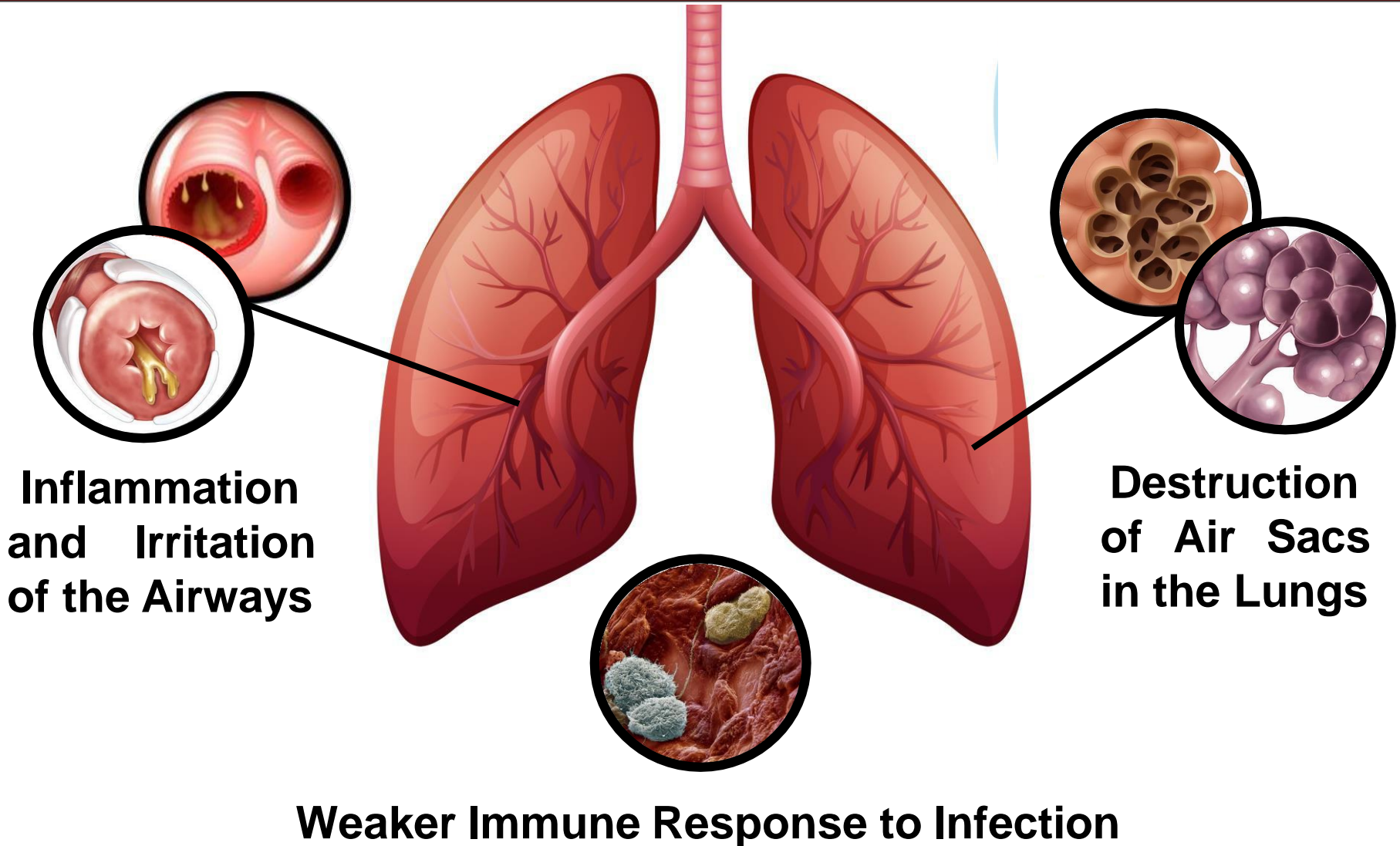
Ads for e-cigarettes are targeting adolescents and appear on TV, radio, and online.



Most e-cigarettes contain nicotine. Nicotine is a highly addictive, harmful drug.

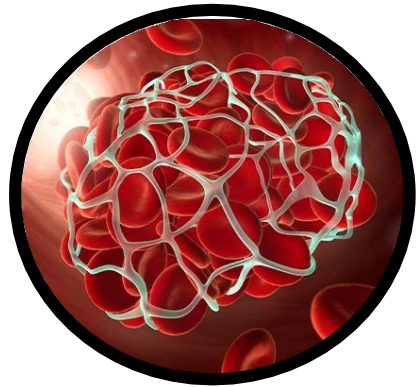
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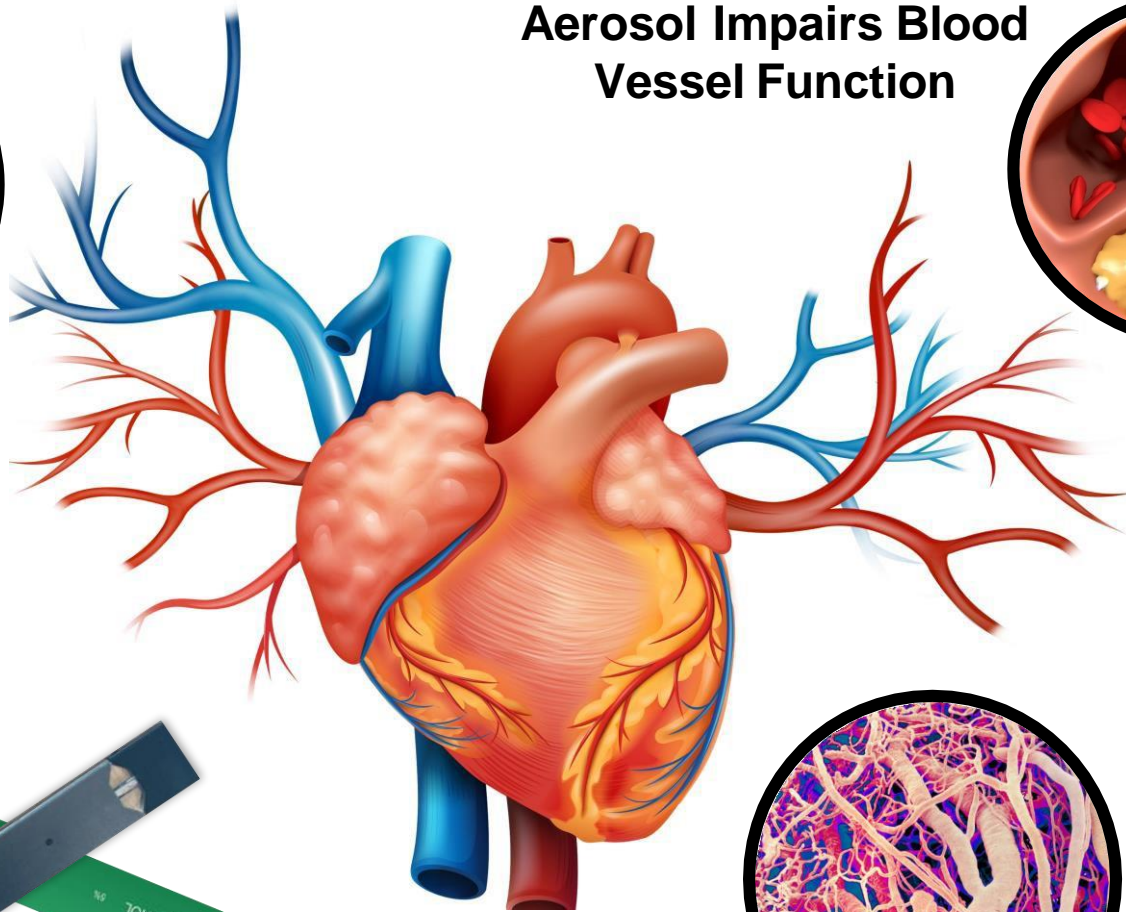


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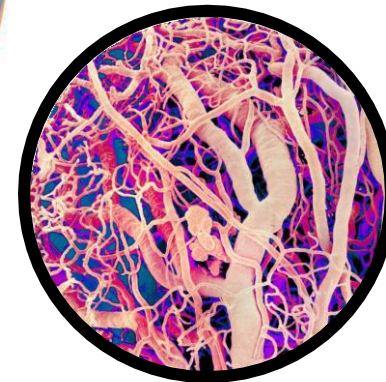
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**↑ Risk for
Blood Clotting**



**Aerosol Impairs Blood
Vessel Function**



**↑ Stiff Blood
Vessels
=
↓ Blood Flow
Throughout
Your Body**

Short term health effects of e-cigarettes

- Coughing
- Wheezing
- Chest pain
- Shortness of breath
- Headache
- Lightheadedness
- Upset stomach
- Irritability
- Inability to focus
- Sleeplessness
- Anxiety
- Depression

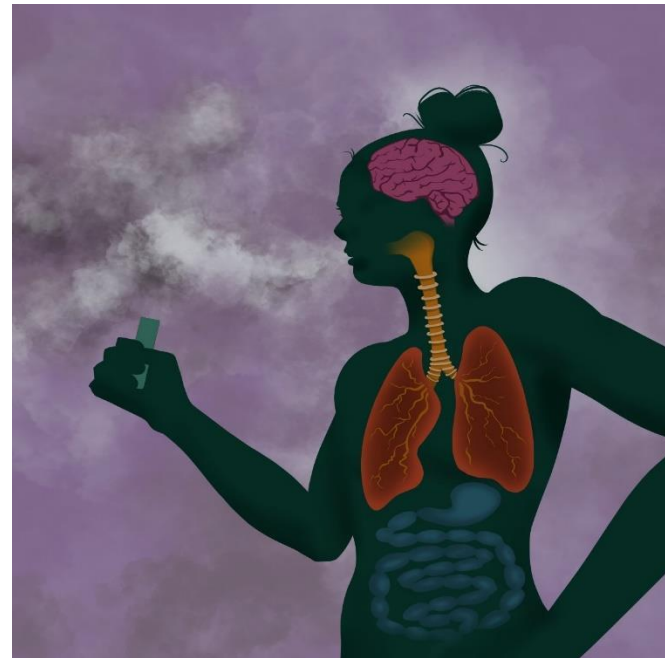


Image credit: Cat Nordstrom/Daily Bruin

Long term health effects of e-cigarettes

- E-cigarette and vaping associated lung injury (EVALI)
- Collapsed lung
- Increased asthma attacks
- Seizures
- COVID-19 risk
- Increased risk of heart attacks
- Weakened immune system



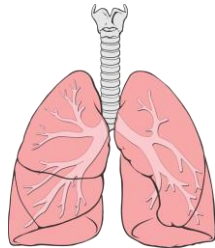
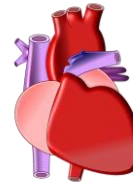
Image credit: CDC.gov

The Body on Nicotine

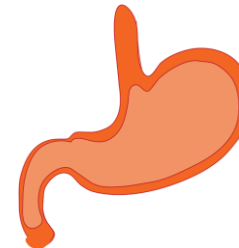
Rewires and changes the brain



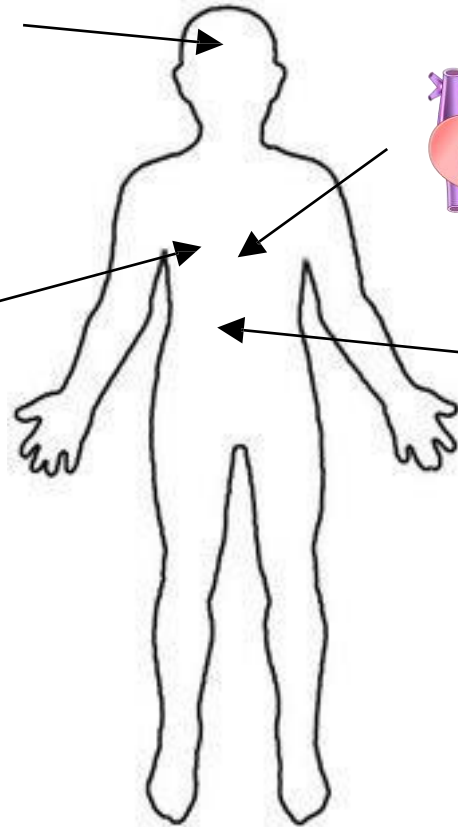
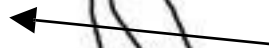
Heart beats faster due to “fight or flight” response



Trouble breathing & damage to lungs



Increased acid reflux



Nicotine and Addiction

- The adolescent brain is uniquely susceptible to nicotine addiction
- Nicotine from vapes reaches the brain within 10 seconds
- Rewiring brain pathways
- Animal studies show that nicotine exposure has effects including:
 - Brain cell damage
 - Immediate and persistent behavior changes

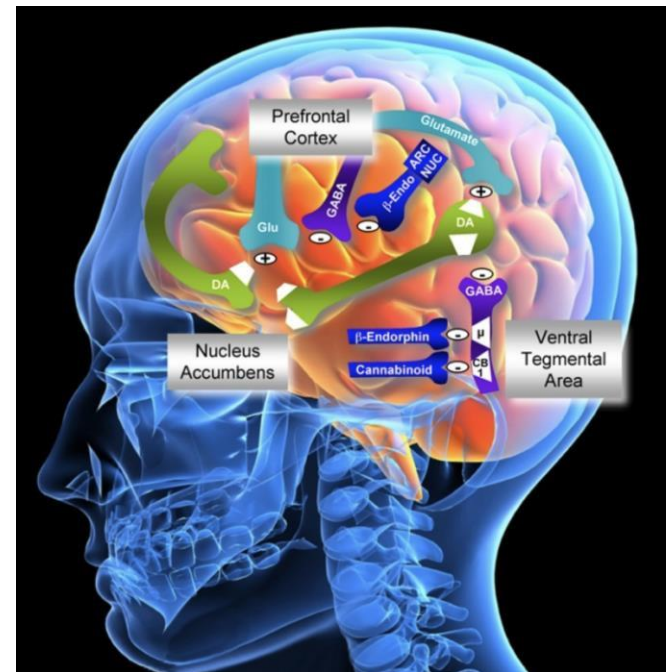


Image credit: Professor Billy O'Connor, inside-the-brain.com

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MONTHS AFTER DEADLINE FOR FDA ACTION ON E-CIGARETTES, WHAT'S LEFT ON THE MARKET?

- KID-FRIENDLY FLAVORED E-CIGARETTES AND E-LIQUIDS
- THE BEST-SELLING E-CIGARETTE BRANDS
- THE MOST POPULAR E-CIGARETTE BRANDS AMONG YOUTH
- DISPOSABLE E-CIGARETTES IN KID-FRIENDLY FLAVORS



Summary

- E-cigs are marketed to children
- Puff Bar, Bidi, Kang vape, Elf Bar, and JUUL contain high levels of nicotine, the addictive substance used to hook smokers
- E-cigs are not a safe alternative to smoking
- E-cigs contain dangerous, cancer-causing chemicals
- E-cigs are largely unregulated

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To promote an environment free of commercial tobacco in primary and secondary schools, the Public Health Law Center has prepared a comprehensive model policy that school districts and schools may adopt.

The policy:

- Provides a definition of commercial tobacco products to include current and future tobacco products;
- Prohibits the following items on campus (inside and outside buildings) and at off-campus, school-sponsored events: Tobacco products and tobacco-related devices, including electronic cigarettes,
- Imitation tobacco products (such as candy cigarettes), and Lighters;
- Prohibits accepting any donations or curriculum from any tobacco-related industry;
- Prohibits any promotion of tobacco products, including electronic cigarette products; and
- Includes effective and holistic enforcement options for student violations beyond suspension and expulsion.

***Include cessation/protect school and students**



PUBLIC HEALTH
LAW CENTER
at Mitchell Hamline School of Law

How Can I Prevent Students From Vaping?

1. **Educational Curriculum:** Directed to students, teachers, parents
2. **Be aware:** know the signs of tobacco use
3. **School Policies:** Ensure there is a 100% tobacco-free policy
4. **Focus on Health:** Offer local resources to address youth nicotine addiction, not simply punish youth users. Talk to your pediatrician/counselor.
5. **Nurture open lines of communication**
6. **Local, State, and National Advocacy Groups**

'I Can't Stop': Schools Struggle With Vaping Explosion



Signs and Symptoms of Vaping Addiction

Answering yes to any of these questions means it's time to get help quitting.

- Need to vape as soon as you wake up or during class
- Feel anxious or irritable when you want to vape
- Have trouble concentrating or sleeping
- Keep vaping even though you know it's bad for you
- Find yourself reaching for your vape without thinking about it
- Get interrupted by thoughts about vaping throughout the day

Tips to Quitting

- Talk to your doctor or pediatrician
- Pick a quit date
- Avoid triggers
- Replace with a healthy choice
- Use Nicotine Replacement Therapy (NRT)
- Get support

What resources can I share with students to help them quit vaping?

- 1-800-Quit-Now
 - Regular phone counseling
 - 8 weeks of free nicotine replacement therapy for those 18+
- Truth Initiative This is Quitting (13-24 yrs)
 - Text VAPEFREEAL to 88709
 - DITCHVAPE to 88709
 - Text based coaching
 - BecomeAnEx (25+)
- Smokefree.gov
- Educate, support, and encourage

1.800.QUITNOW

QUITNOWALABAMA.COM

1-800-784-8669



truth initiative®

INSPIRING LIVES FREE FROM
SMOKING, VAPING & NICOTINE

THIS IS QUITTING

The first-of-its-kind program to help young people quit vaping, This is Quitting has helped more than 250,000 youth and young adults on their journey to quit vaping. Learn more about how it works and the additional resources available for parents of young vapers and for adults who want to quit.

Teens and young adults can join for free by texting **DITCHVAPE** to **88709**

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Tobacco Prevention and Control

3 Ways Smoking/Vaping Can Affect Your Body

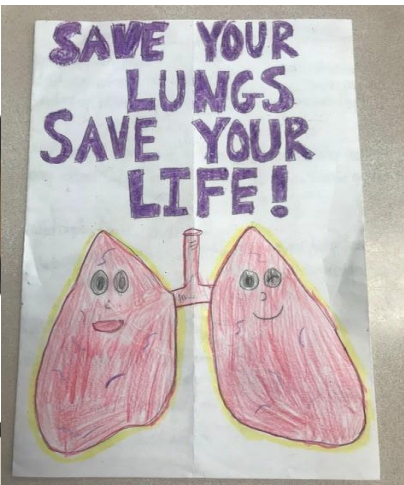
- 1. It can damage the lining of your lungs, making it harder to breathe.
- 2. It can cause heart disease, which can lead to a stroke or heart attack.
- 3. It can cause lung cancer, which can lead to death.

3 Reasons Not to Smoke/Vape

- 1. It can damage your lungs and make it harder to breathe.
- 2. It can cause heart disease, which can lead to a stroke or heart attack.
- 3. It can cause lung cancer, which can lead to death.

3 Ways to Say No to Smoking/Vaping

- 1. Say no to people who offer you a cigarette or a vape.
- 2. Say no to people who offer you a cigarette or a vape.
- 3. Say no to people who offer you a cigarette or a vape.



Don't smoke or you could have a stroke

Quit smoking, vaping and tobacco is hard. Asking for help is easy.



JUULS AREN'T COOL

Be Vape Free Like Donald Duck



Your craving is just TEMPORARY but the damage it causes to your lungs is PERMANENT.

Don't smoke!!

VAPE FREE AL