



Partnership to End Addiction

Juuling, Dripping, Dabbing and More:
What School Professionals Need to
Know About Vaping

Fall 2020

What you need to know

- Vaping basics
- What's the appeal?
- Hooking a new generation
- Vaping by the numbers
- Why the concern?
- Government oversight
- Actions schools can take
- Additional resources



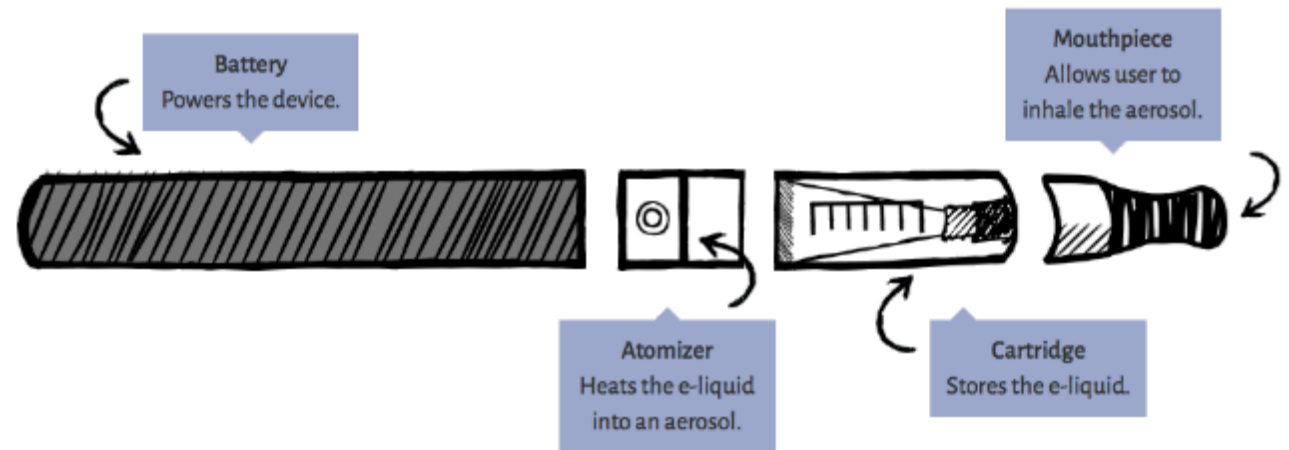


Vaping Basics

What is vaping?

Vaping is the act of inhaling and exhaling the aerosol, often referred to as “vapor,” produced by an e-cigarette or similar device. Components include:

- Cartridge or reservoir to hold a e-liquid
- Heating element (atomizer)
- Power source (battery)
- Mouthpiece to inhale





Cig-a-Like	Variations	Vape Pens	Mods	Pod-Based
E-cigarettes came onto the market around 2007. Most delivered nicotine and were disposable.	Variations on the first e-cigarettes included products like e-hookah and rechargeable versions.	These have batteries that can reach higher temperatures, have refillable e-liquid cartridges and allow users to control how often they inhale.	Large size modifiable e-cigarettes allow for more aerosol, nicotine and other chemicals to be breathed into the lungs at a faster rate.	These e-cigarettes look like USBs and contain disposable pods with higher amounts of nicotine than previous generations.

Source: Science News for Students

JUUL: the iPhone of vapes

- JUUL - \$14.99 plus \$15.99/pack of 4 pods
- Pod flavors: Menthol, Virginia and Classic Tobacco
- Contain 3% or 5% nicotine = 1+ pack of cigarettes or 200 puffs



Other vape devices



What is being vaped?

- Flavored liquids including chemicals like glycerin and propylene glycol
- Flavored liquids with varying levels of nicotine
- Flavored liquids with vitamins and essential oils
- Leaf marijuana, THC oil/wax



The nicotine “arms race”

1 pack of Cigarettes

≈ 20 mg of inhaled nicotine



= 20

Cigarettes

1 JUUL pod

≈ 41.3 mg of nicotine



= 44

Cigarettes

1 PHIX pod

≈ 75 mg of nicotine



= 75

Cigarettes

1 Suorin pod

≈ 90 mg of nicotine



= 90

Cigarettes

Source: Science News for Students

Vape devices for marijuana and oils



Disposable marijuana vape pens and cartridges

Delivered to your door by Eaze



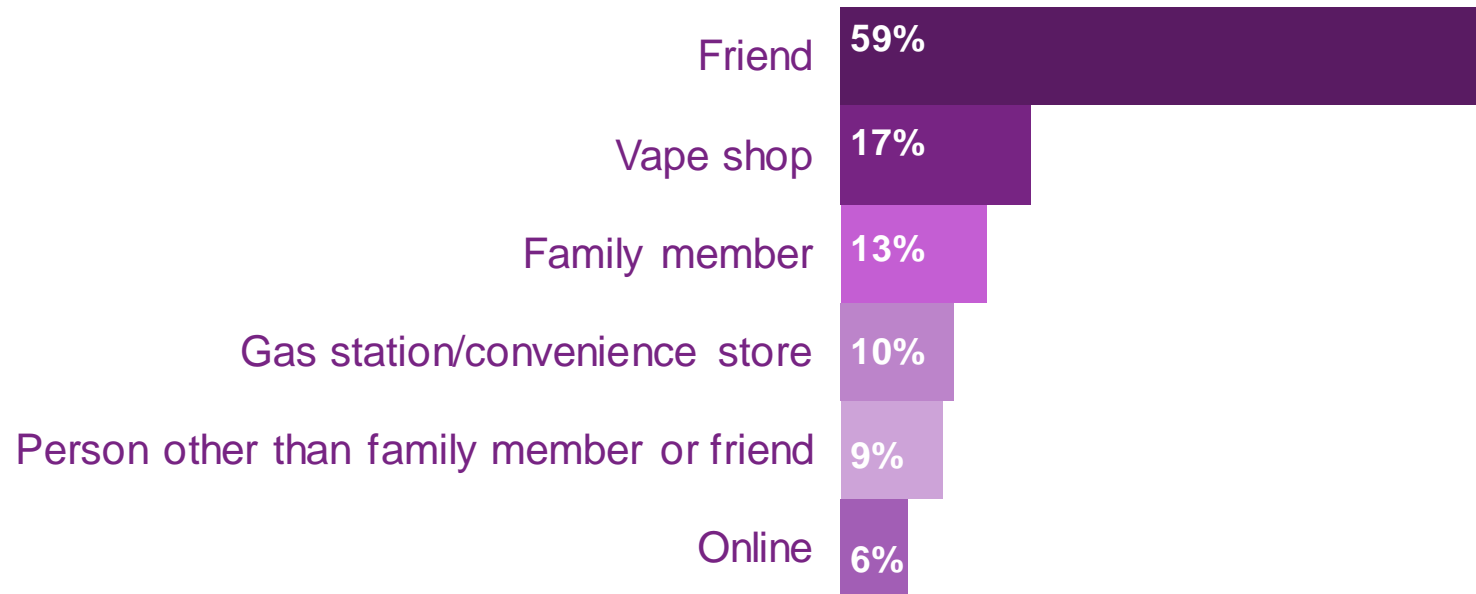
A new device: Philip Morris International's IQOS

IQOS is a “Heat, Not Burn” Device



How do youth get vaping products?

Sources of e-cigarettes among students who vaped in the past 30 days (2018)



U.S. law now prohibits the sale of tobacco products, including e-cigarettes, to anyone under age 21

Slang terms

- **Analog**: tobacco as the old physical or "analog" version
- **Juul, Pax, NJOY, Puff Bars, Stigs**: styles/brands
- **Atty**: atomizer to heat e-liquid
- **Cart**: cartridge that holds the e-liquid
- **Carto**: cartridge and atomizer combined into a single unit
- **Cloud chasing**: e-cigarette/mod users tweak their hardware and liquid selections to produce ever bigger and thicker clouds of aerosol
- **Draw**: amount of force required to accommodate inhalation through the mouthpiece of an e-cigarette
- **E-liquid, smoke juice**: the liquids that are vaporized when using an e-cigarette
- **PV**: personal vaporizer, often the mod style

More slang terms

- **O/Ohm**: standard unit of electrical resistance
- **PG**: propylene glycol is used as a diluent (a filler and diluting agent)
- **TH**: throat hit is the sensation an e-cigarette user (and tobacco smoker) may experience when the aerosol hits the back of their throat
- **VG**: vegetable glycerin acts as a diluent, or filler, and is a common ingredient found in e-liquid

More slang - dripping

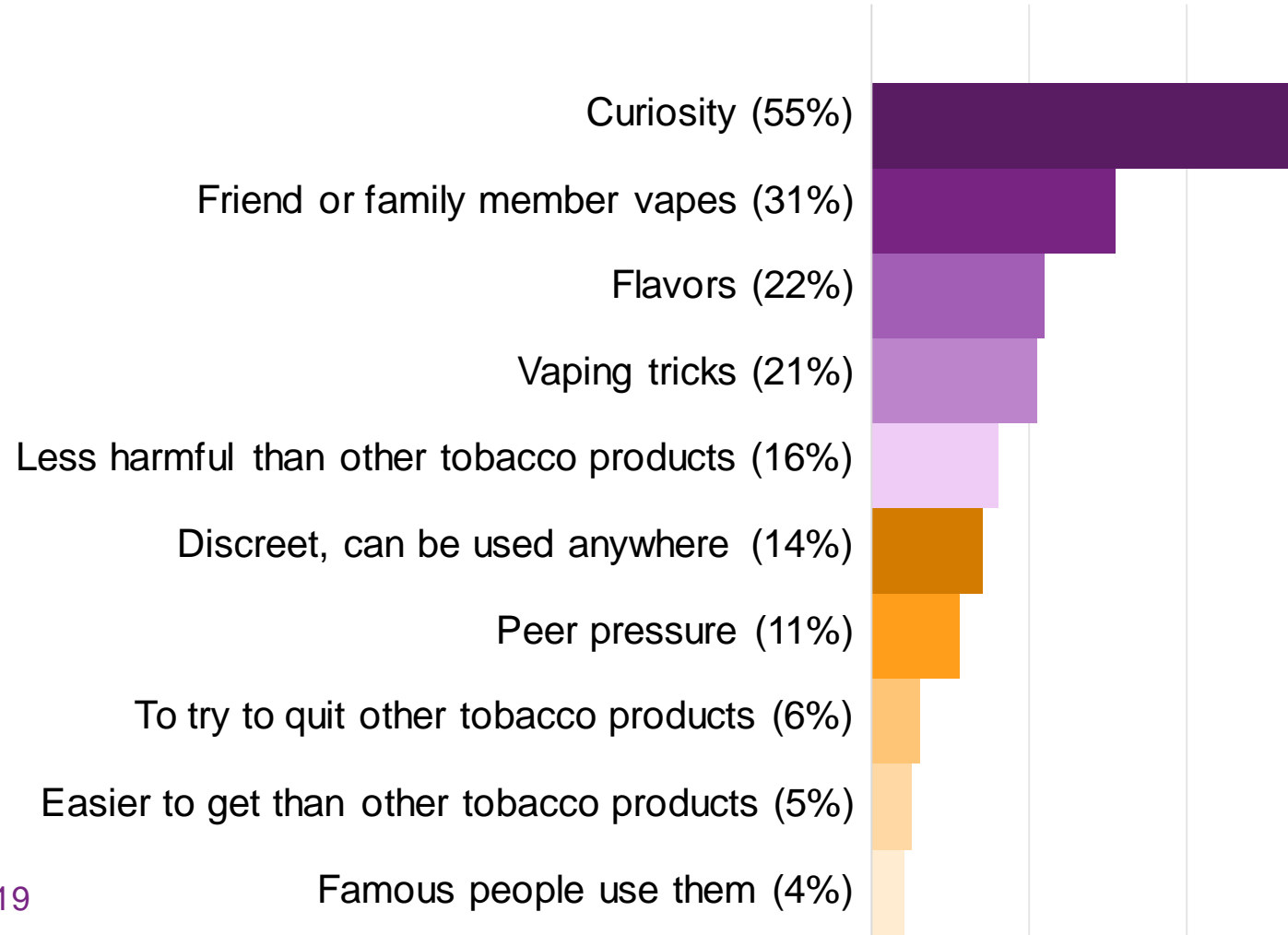
- Apply nicotine liquid directly to heated coils of e-cig or vaporizer
- Produces thick clouds of nicotine vapor and a stronger “throat hit”





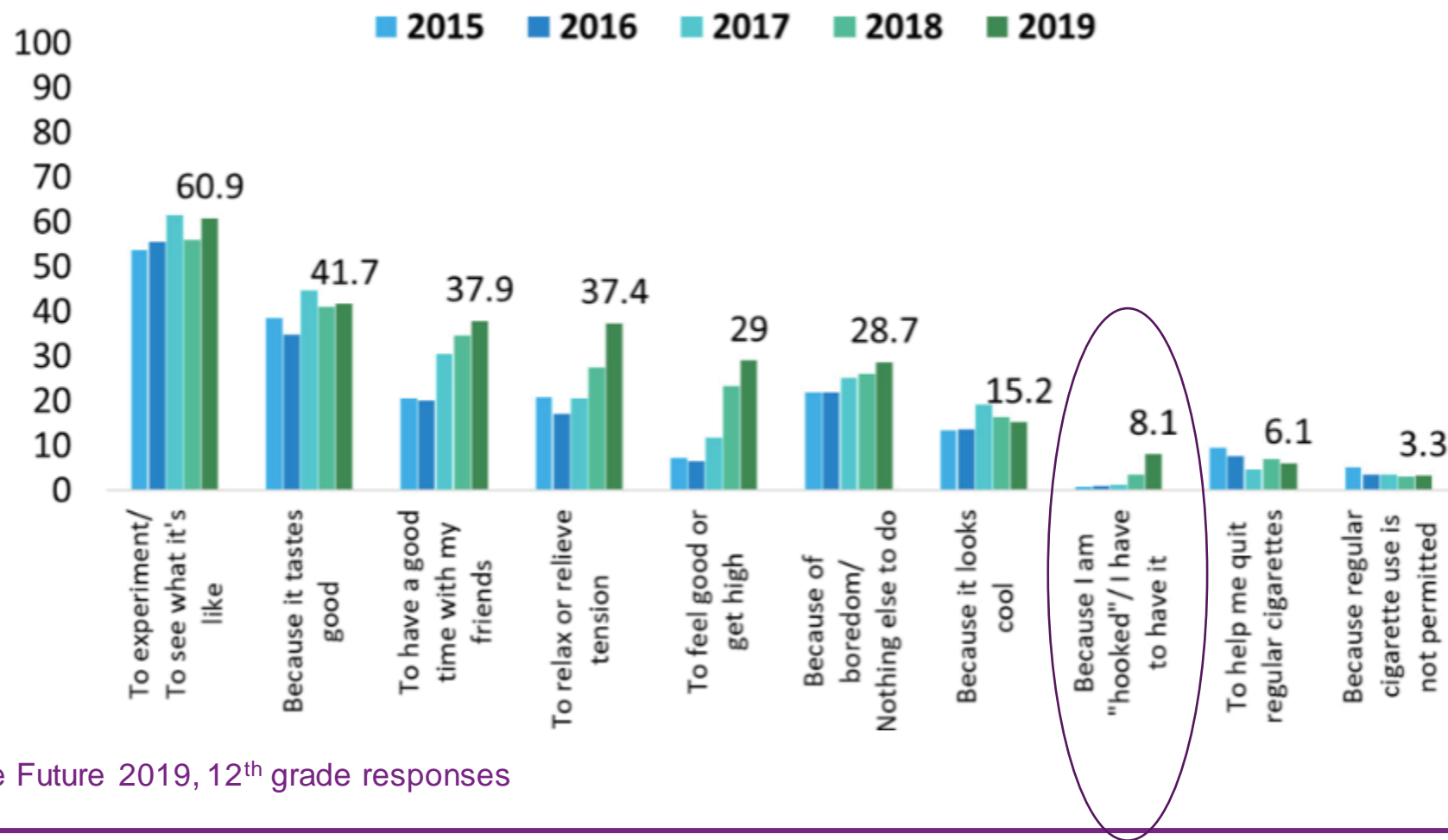
What's the appeal?

Why teens vape



Source: CDC, 2019

Reasons for vaping



Source: Monitoring the Future 2019, 12th grade responses



Are we hooking a new generation?

How is the tobacco industry going to replace older smokers?

- 90% of adult smokers began smoking before age 18
- 95% of those with nicotine addiction began smoking before age 21



Big tobacco behind popular vaping products



Tobacco + e-cigarettes: advertising



Tobacco + e-cigarettes: packaging



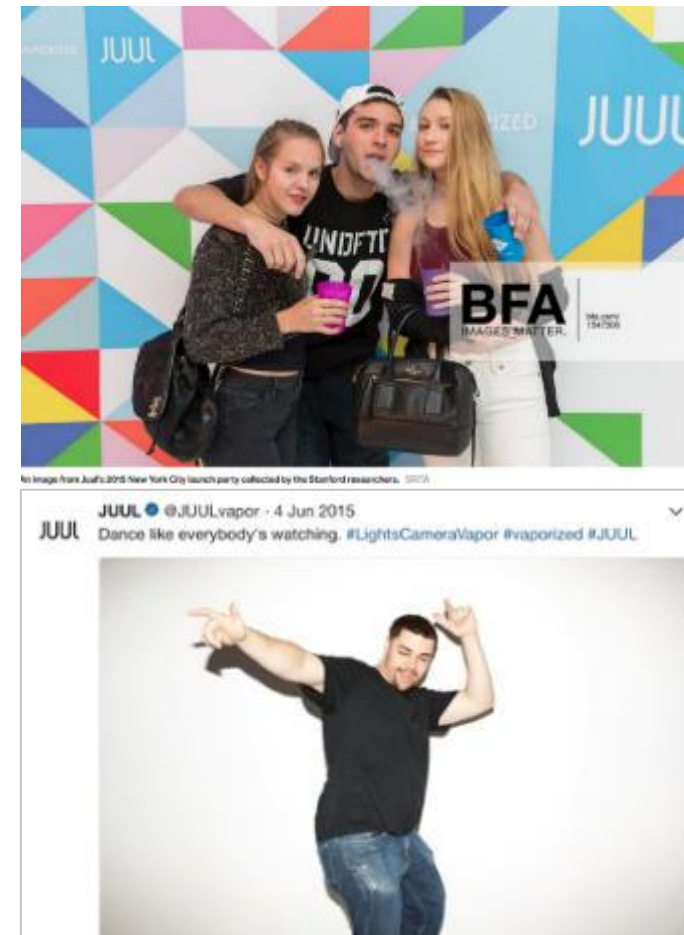
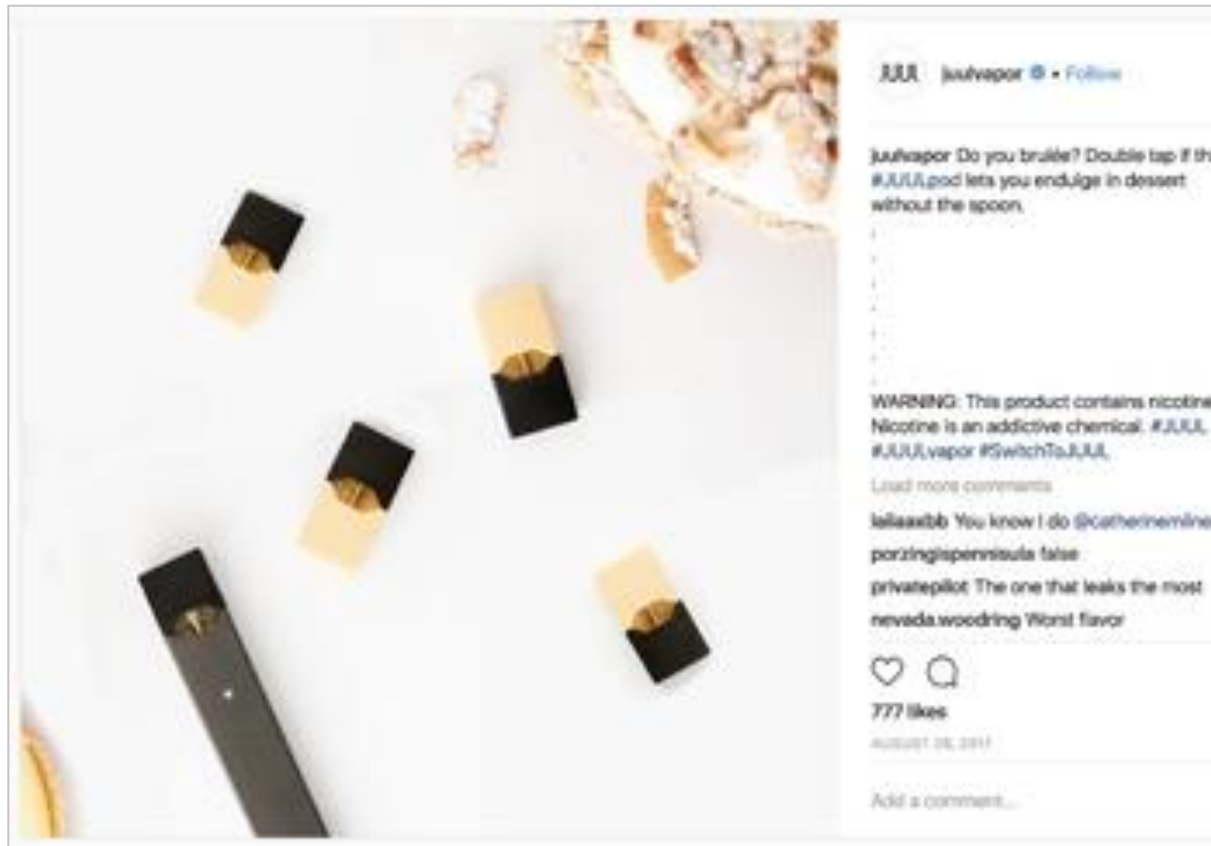
Youth-friendly designs and flavors



4 out of 5 kids who have used tobacco products started with a flavored product.



Social media marketing



Social media posts and JUUL



“JUULery”





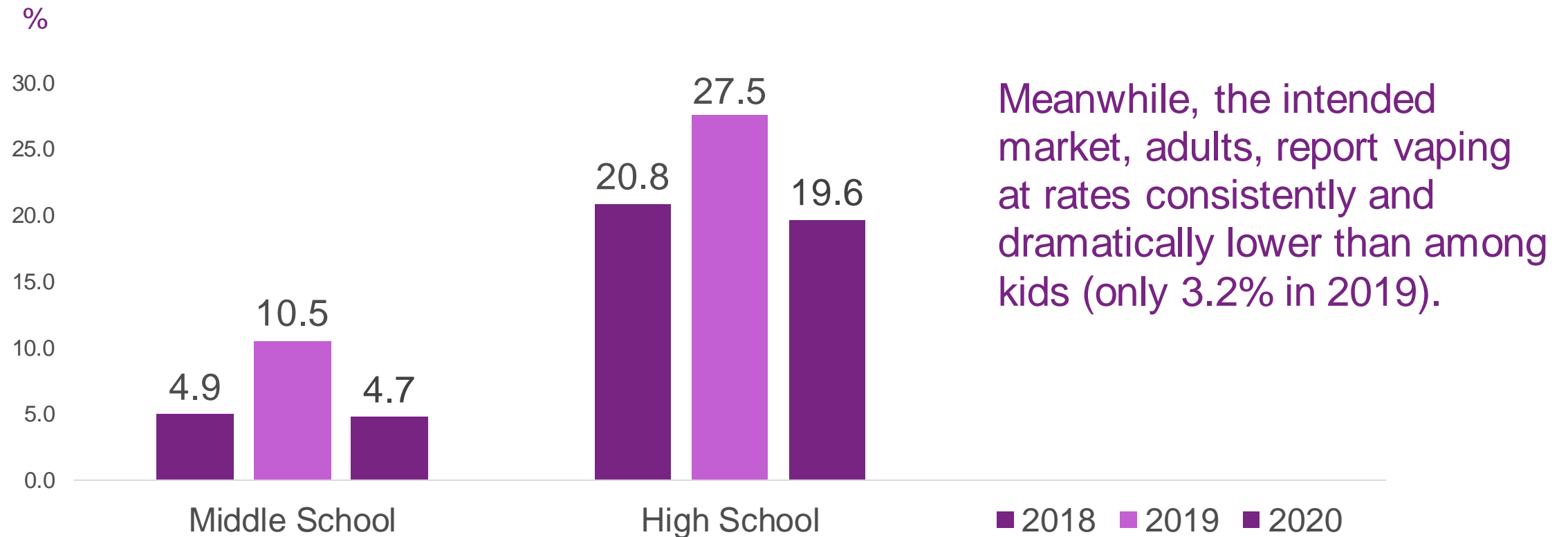
Source: truthinitiative.org



Vaping by the numbers

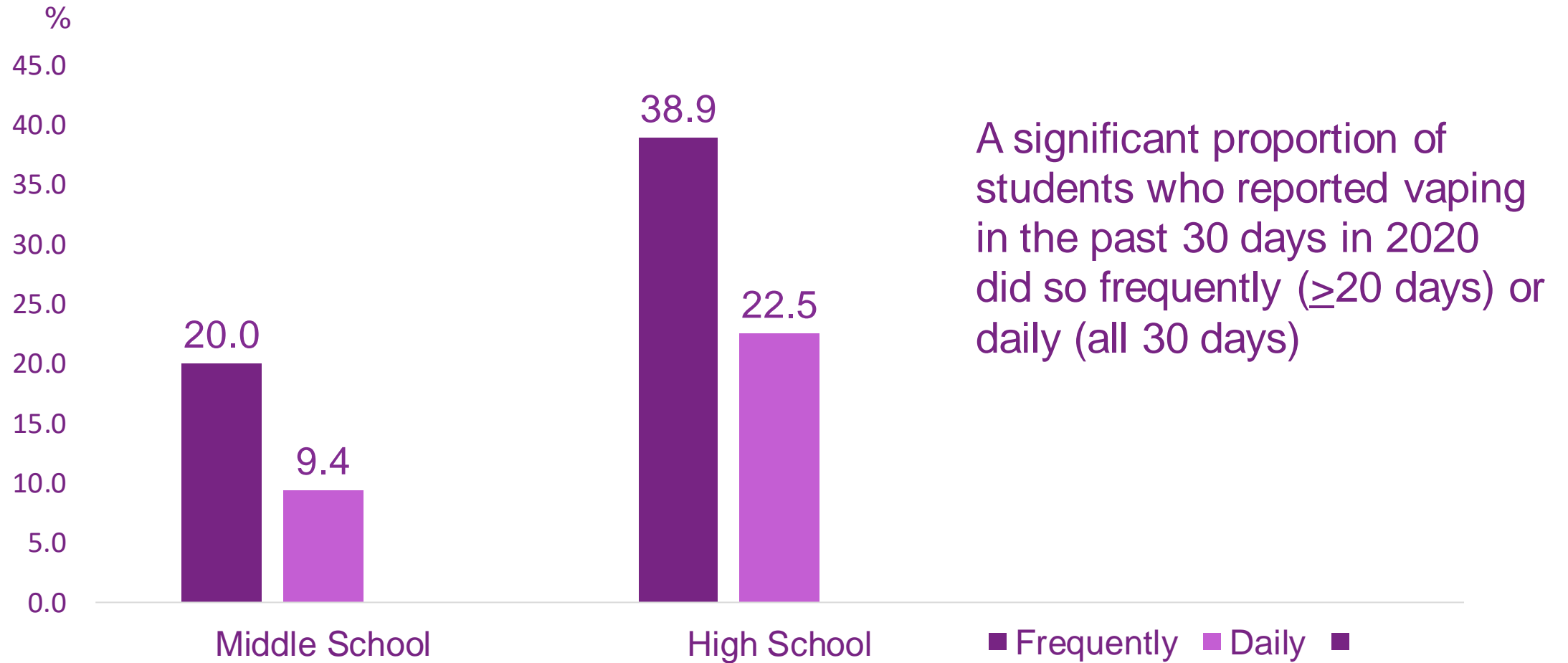
How many people vape?

Percentage of students reporting vaping in the past 30 days (2018-2020)



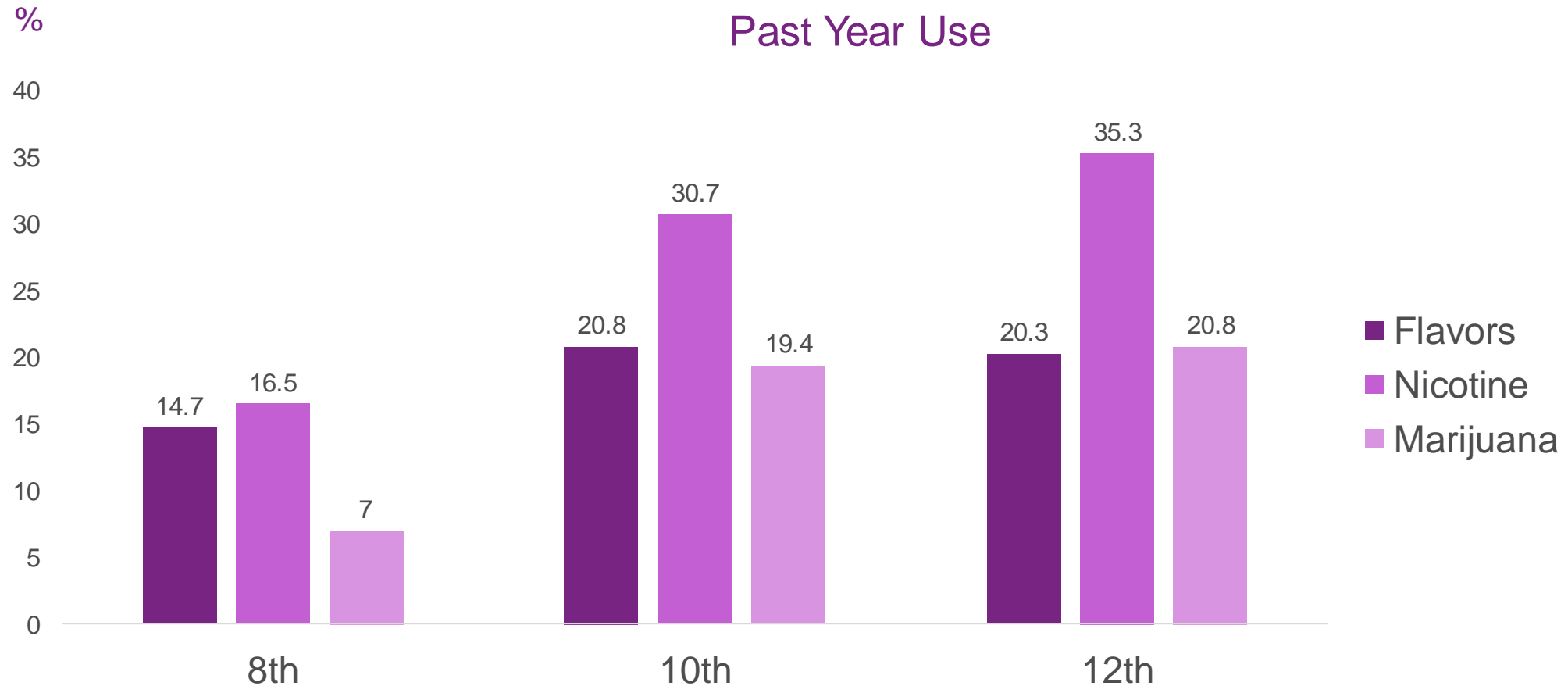
Source: CDC

Reports of frequent vaping in the past 30 days



Source: CDC

What are they inhaling?



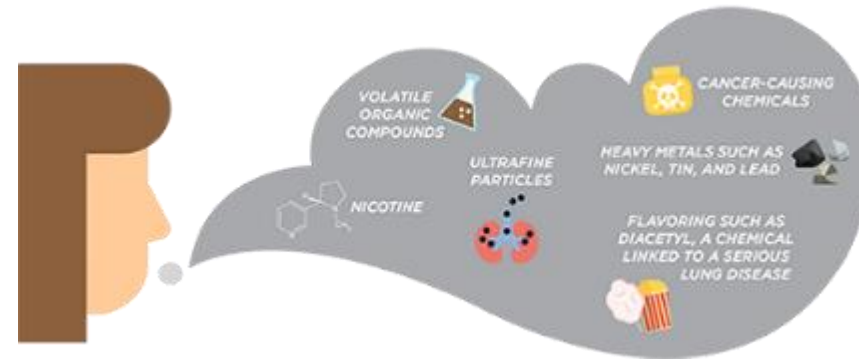
Source: Monitoring the Future 2019



Why the concern?

Harmful chemicals: cigarettes vs. vaping

Cigarette smoke contains over 7,000 chemicals, including known cancer-causing (carcinogenic) compounds and hundreds of other toxins



The aerosol created when vaping contains harmful ingredients:

- Nicotine
- Ultrafine particles
- Flavorings
- Volatile organic compounds (e.g., benzene, found in car exhaust)
- Heavy metals (e.g., nickel, tin, lead)

So why the concern?

- Nicotine itself is harmful
- The chemicals in the aerosol are harmful
- Risk of progressing to cigarette smoking
- Dual use – both vaping and smoking – is common
- Risk of addiction
- Link to other substance use and addiction
- Link to mental health disorders
- Recent spate of illnesses and deaths

Nicotine itself is harmful

- Extremely addictive, especially for kids
- Addiction sets in quickly
- Structurally changes the developing brain
- Increases risk of addiction to other drugs
- Affects attention, learning, mood, impulse control
- Increases blood pressure, respiration, heart rate
- Harms nervous, cardiovascular, respiratory, and reproductive systems
- Increases risk of developing diabetes

Nicotine's impact on teens

- Teen brain reacts differently to nicotine
- Chronic nicotine exposure can, among other things, reduce attention span and increase reckless behavior
- Effects are less intense and long-lasting in adults

Adolescent		Adult
Enhances locomotor activity	Acute Nicotine	Decreases locomotor activity
More sensitive to rewarding effects	Sensitivity	More sensitive to aversive effects
Display blunted withdrawal symptoms	Nicotine Withdrawal	Display more severe withdrawal symptoms
Well tolerated; lowers aversion to high doses later in life	High Dose of Nicotine	Aversive
Enhances acquisition of cocaine, meth and alcohol	Nicotine Pretreatment	No effects on psychostimulant or alcohol self-administration

Source: Child Mind Institute

Risk of progressing to cigarettes

- Adolescent vaping increases the odds of smoking about fourfold



4x



- Among 12- to 15-year olds considered low-risk for smoking, vaping was associated with a 9x increase in their odds of smoking

Sources: Soneji et al., 2017; 2018

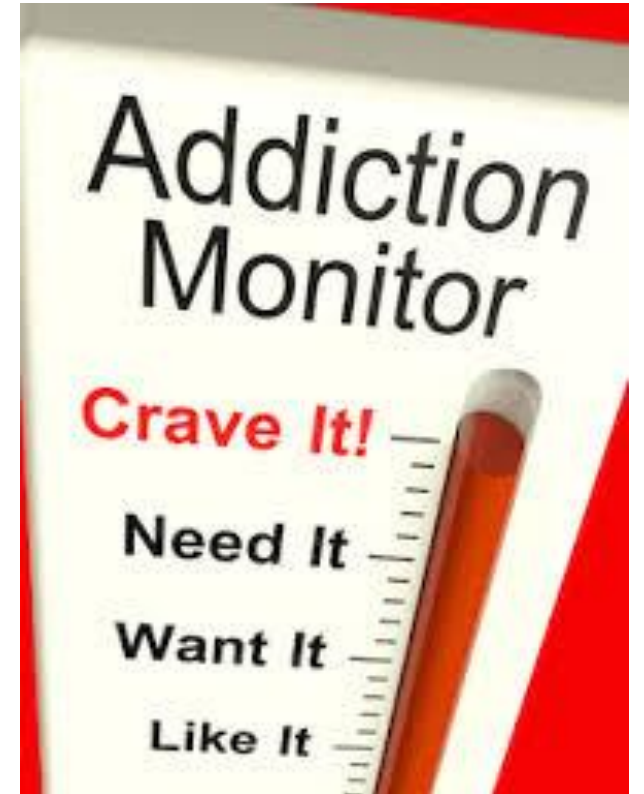
Use of multiple nicotine products is common

- **1 in 3** middle and high school students who use nicotine products use **two or more**
- Many people who use e-cigarettes to quit smoking become 'dual users'
- Use of multiple nicotine products increases the risk of addiction



Risk of nicotine addiction

- Because of high nicotine content, many who vape can't stop – nicotine is a highly addictive drug
- Vaping is more addictive than cigarette smoking
- Nicotine, like all drugs, changes the structure and function of the brain
- Addiction risk increases for those with family history or mental health problems
- Intense withdrawal symptoms – strong cravings, fatigue, irritability, difficulty concentrating



Link to other substance use and addiction

- Young adults who vaped in the past year:
2x higher odds of having tobacco use disorder
- Teens who used e-cigarettes but never marijuana:
2-4x higher odds of marijuana use
- Nicotine exposure alters brain and increases vulnerability to other substance use, including marijuana and cocaine

Vaping-related illnesses

- Shortness of breath, weight loss, fatigue, gastrointestinal problems and lung failure
- As of February 2020
 - Nearly 70 deaths; 2,800 illnesses
 - Across 50 states, DC and U.S. territories

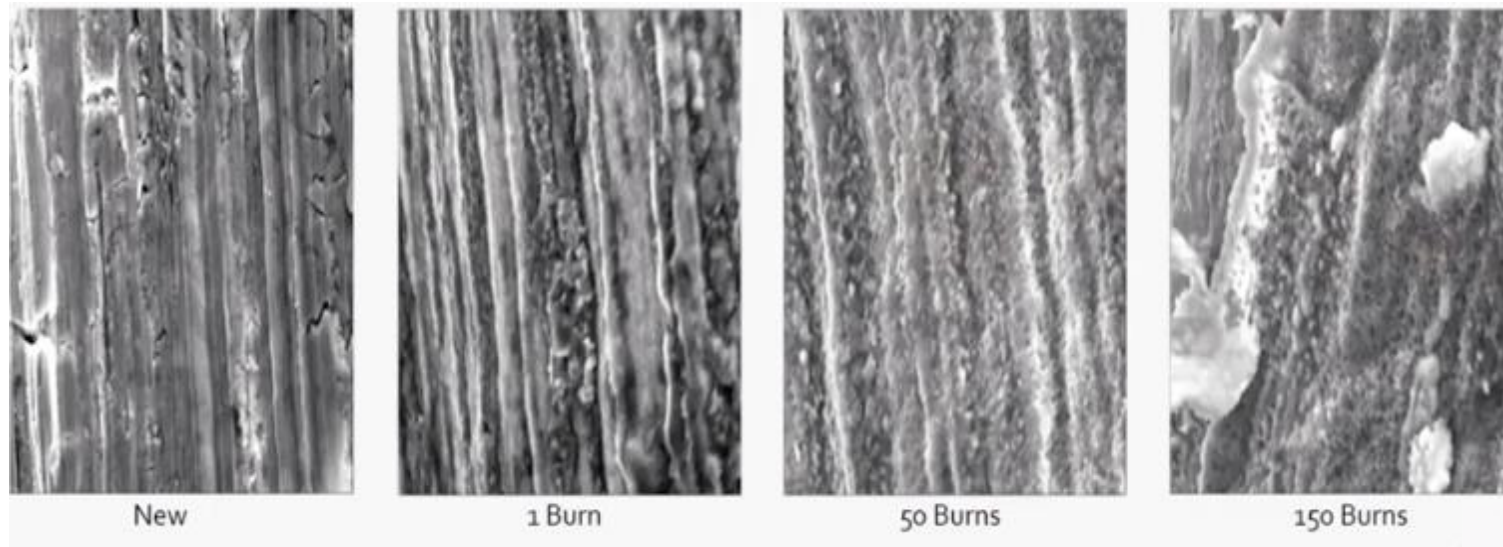
On the black market, **vitamin E acetate** is sometimes added as a cutting agent, decreasing the amount of THC in vape cartridges. **It is linked to most cases of EVALI, but not all.**

Source: CDC



Hard metal lung disease

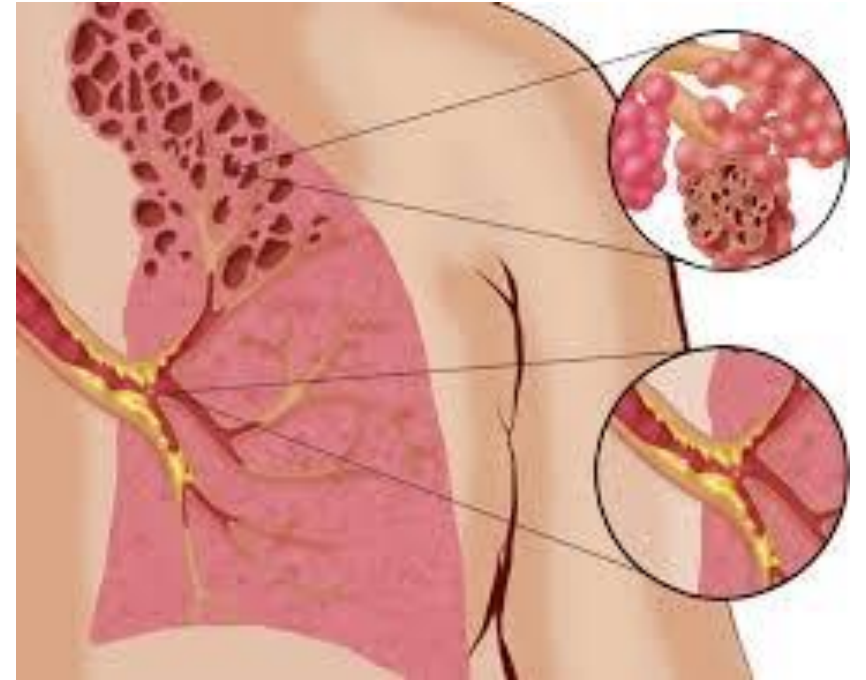
- When the metal coils of e-cigarettes heat up to turn e-liquids into aerosols, **toxic metals like nickel, aluminum, manganese, lead, cobalt and chromium** can leach into the liquid



Coil under 2,000x magnification using an electron microscope
At 150 burns, it shows pitting and flaking

Bronchiolitis obliterans

- Diacetyl, found in the majority of e-liquids, linked to “popcorn lung”
- Popcorn lung: inhaled chemicals scar tissue in the lungs, making it difficult to breathe
- First known case in teen who vaped for five months



“Popcorn Lung”

Vaping and COVID

- Vaping poses a significant risk to young people when it comes to contracting, transmitting and experiencing the health effects of COVID-19
- Young people who have vaped are *5 times more likely* than those who haven't vaped to be diagnosed with the virus
- Because vaping weakens the cardiovascular, respiratory and immune systems, vulnerability to the virus and its symptoms is elevated among those who vape
- COVID symptoms are similar to those of EVALI



Government oversight

What is the government doing?

- The 2016 “Deeming Rule”
 - Includes oversight of e-cigarettes, e-cigars, e-hookah, vape pens, e-liquids & apparatus
 - All manufacturers must receive marketing authorization from the FDA
 - Ingredients must be listed in addition to a nicotine warning
 - No claims like “lower risk” or “less harmful” without an FDA order in effect
 - No free samples
 - No vending machine sales except in adult-only venues
- Cannot be sold to individuals under age 21
- Prescription medications are illegal in e-liquids

Temporary flavor ban

- The Trump administration has instituted a temporary flavor ban on all pod/ cartridge-based systems, excluding menthol and tobacco flavors
- Flavors in disposables and tank systems will still be allowed



Inadequate government regulation

- No national restrictions on advertising
- Slow phase-in of “Deeming Rule”
- No ban on all flavors
- No requirement that products be kept behind the counter
- Counterfeit products sold in plain sight on social media



What schools can do

Prevention

- The main way to prevent nicotine addiction is to keep people from using nicotine products
- Strategies that are implemented early work best
- Effective approaches are comprehensive and involve:
 - Education and awareness
 - Appeal to students' desires for independence and future success
 - Reduced access and availability
 - Early detection of risk, parent involvement
 - Compassionate, health-based interventions that promote cessation and improved mental health

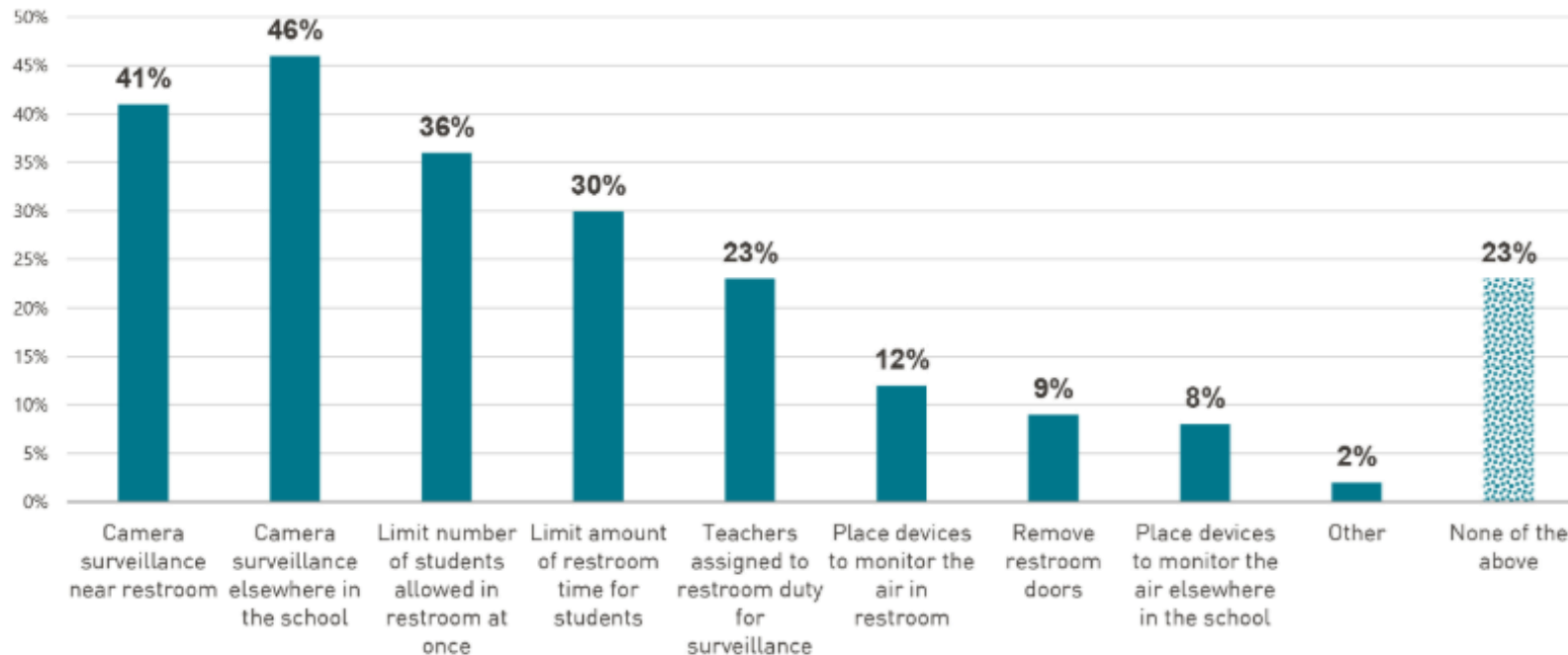
Signs of student vaping

- Frequent trips to the bathroom at the same time every day
- Mood changes before and after leaving the room
- Students hanging out in bathroom stalls together
- Returning to class smelling of minty or sweet scents
- Putting what appears to be thick markers or pens in their mouths; using colorful USB-like devices
- Using lanyards or hoodies to hide vaping devices
- Unexplained shifts in mood, behavior, academics



How some schools have approached vaping

What have schools done about e-cigarettes?



Source: November 2018 survey of 1,525 middle and high school teachers and administrators across the U.S.

Addressing vaping in schools

- Offer a research-based anti-vaping curriculum
- Challenge students' perceptions of norms (it's not true that 'everyone' vapes)
- Address the pull of addiction, reasons for use
- Appeal to students' desire for independence by demonstrating industry marketing tactics that target youth
- Sponsor student-led anti-vaping campaigns
- Offer alternative, safer means of having fun, reducing stress and taking risks



Helpful messages for teens

- Don't fall for it
 - Don't let big businesses take advantage of you, ruin your health, make you dependent
 - It's not cool to be addicted to and dependent on a drug
- Don't be fooled by celebrity and social media promotions
 - There's money behind them, not your best interests
- Don't contribute to environmental damage
- Make smart and healthy choices
 - Vaping really is dangerous
 - You only have one brain and body and they're in pretty great condition right now – why mess up your health?

What schools can do

- Be vigilant about places on campus where students vape
 - e.g., check pop-up ceilings in bathrooms where vaping devices may be hidden, school parking lots
- Track vaping and other tobacco use trends in school/district and adjust approaches accordingly
- Educate staff, parents/caregivers on the harms of vaping and on how to respond effectively to youth vaping
- Identify and intervene with students who vape using a health rather than a punitive approach
 - Nicotine addiction is powerful and difficult to overcome
- Share community resources that can provide assistance

Youth-friendly materials

- CATCH My Breath – CATCH (Coordinated Approach to Child Health)
 - Prevention program for ages 11-18; 4 sessions lasting 35-40 minutes each
 - Cooperative learning groups, group discussions, goal setting, interviews, media literacy
- The Tobacco Prevention Toolkit – Stanford University School of Medicine
 - In-classroom units and lesson plans on e-cigarettes, tobacco and nicotine
 - Includes PowerPoints, discussion guides, worksheets and activities
- ASPIRE -- MD Anderson Center
 - Free, bilingual, online tool that helps students learn about being tobacco free

Youth-friendly materials

- smokeSCREEN -- a smoking prevention videogame – play2PREVENT
- Get Smart about Tobacco: Health and Science Education Program – Scholastic
- The Real Cost of Vaping – FDA and Scholastic
 - Information and a single lesson plan for grades 9-12
- Know the Risks: A Youth Guide to E-cigarettes–CDC's Office on Smoking & Health



Additional Resources

Helpful resources

- Partnership to End Addiction guide – *Vaping: What School Professionals Need to Know to Help Protect Children, Teens and Young Adults*: <https://drugfree.org/community-resources/>
- Centers for Disease Control and Prevention (CDC):
https://www.cdc.gov/tobacco/basic_information/e-cigarettes/index.htm
- Stanford's *Tobacco Prevention Toolkit*:
<https://med.stanford.edu/tobaccopreventiontoolkit/E-Cigs.html>
- Truth Initiative's *quitting resources*: <https://truthinitiative.org/thisisquitting>

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