



The emerging threat!!!

The ENDS

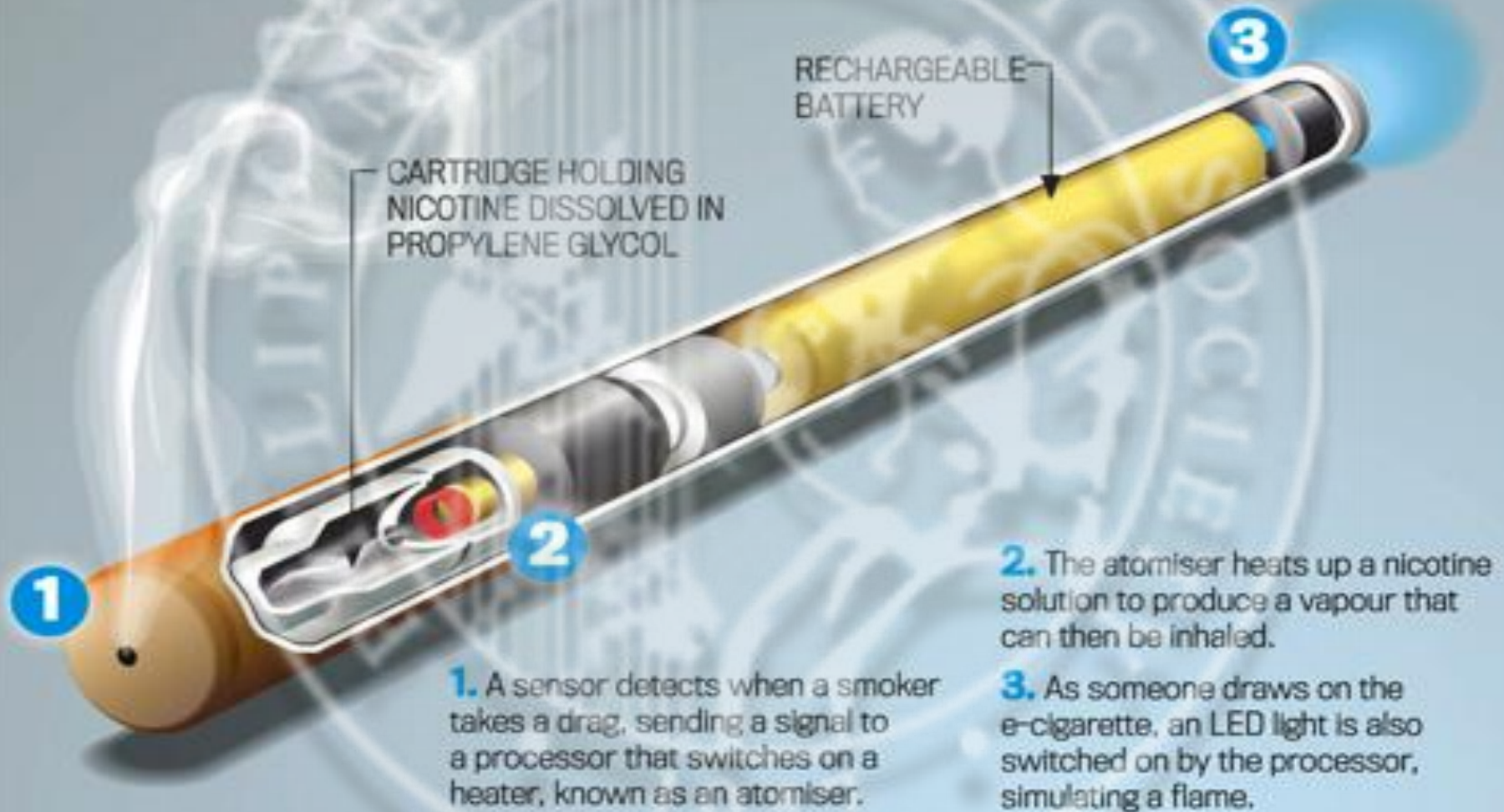


#ne4KidsAgainstTobacco

AMERICAN ACADEMY OF PEDIATRICS
Julius B. Richmond
Center of Excellence

What are we talking about?

Inside the e-cigarette



Electronic Cigarettes

Vape devices and vape pens

Personal vaporizers

Electronic Nicotine Delivery Systems (ENDS)

Alternative Nicotine Delivery Systems (ANDS)

Electronic cigars or e-cigars

E-hookah or hookah sticks/pens

Mechanical mods and tanks

Cigalikes



Types of Vaping Devices

Examples of closed ECIG systems

Examples of open ECIG systems and parts



Examples of open and closed electronic cigarette systems.



VAPING AND YOUR TEEN:

Seeing Through the VAPOR

WHAT ARE E-CIGARETTES?



Electronic Cigarettes

are battery-operated products designed to deliver nicotine, flavor, and other chemicals. They turn chemicals, including highly addictive nicotine, into an aerosol that is inhaled by the user.

Vaping

"Vaping" is becoming an increasingly dangerous problem for teens due to the ease of access, unrecognizable odor, and misconception of the health factors.



E-Cigarettes among adults in the Philippines

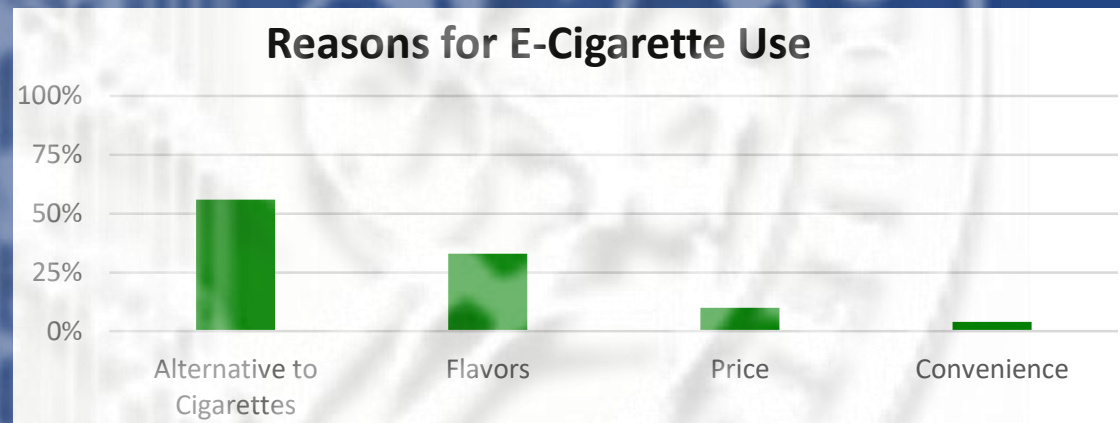
2015 Global Adult Tobacco Survey:

- 32% of adults had ever heard of e-cigarettes
- 3% had ever used e-cigarettes
- 1% were current users of e-cigarettes

2016 IPSOS survey of adult smokers:

- 66% were aware of e-cigarettes
- 70% believe e-cigarettes are a positive alternative to cigarettes

Reasons for Use:



E-Cigarettes among youth in the Philippines

2015 Global Youth Tobacco Survey

- 43% of students age 13-15 had heard of e-cigarettes
- 12% had ever tried e-cigarettes
 - Gender difference: 16% of Boys and 8% of Girls

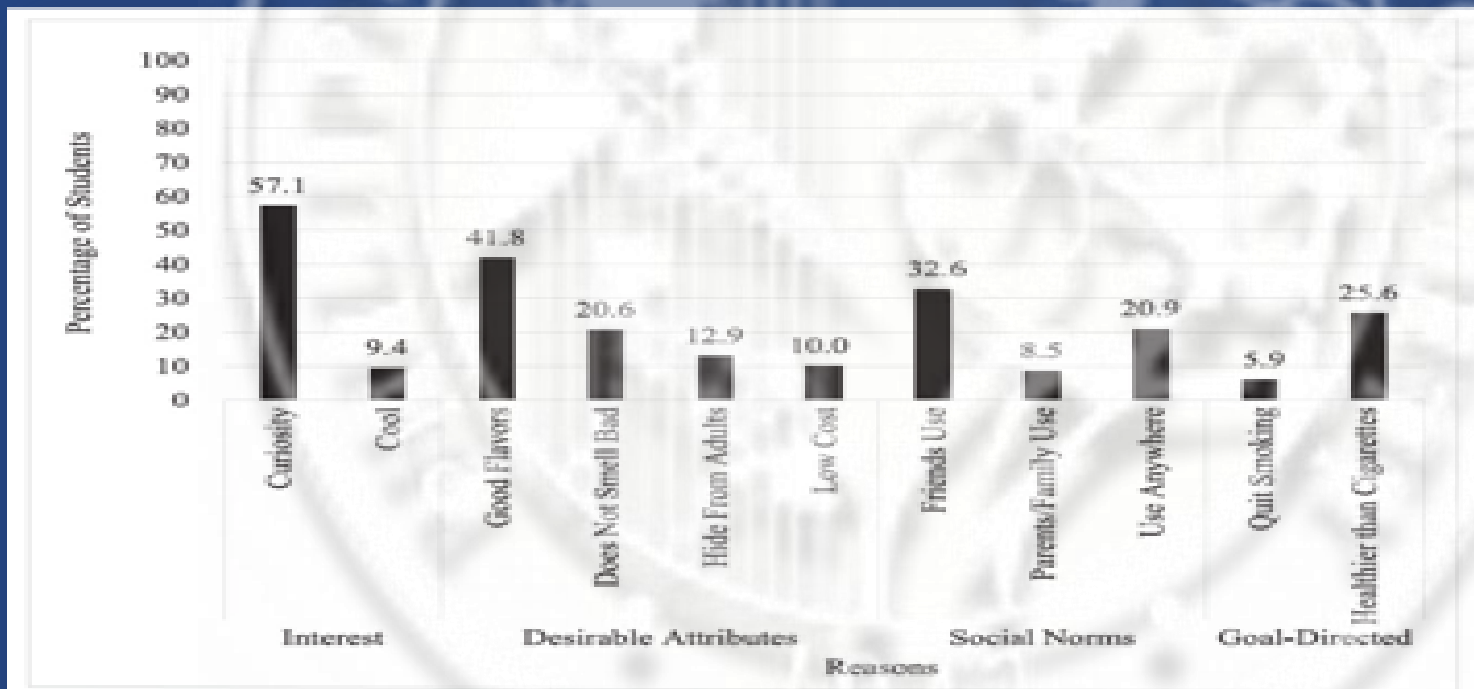


FIGURE 1

Values represent the percentage of middle and high school students who endorsed each reason for first trying e-cigarettes among a subsample of youth who reported ever using e-cigarettes ($n = 340$).

ENDS are Sold Everywhere

- “Vape” shops
- Convenience
- Gas stations
- Retail outlets
- Mall kiosks
- Grocery stores
- Internet vendors



What are the ingredients as advertised in ENDS solutions (e-juice)?

- Humectant
- Flavoring
- +/- Nicotine
- Toxicants
- Carcinogens
- Metallic nano-particles
- (from the coil/heating element)
- Other psychoactive ingredients
- (added by users)



WHAT PARENTS NEED TO KNOW

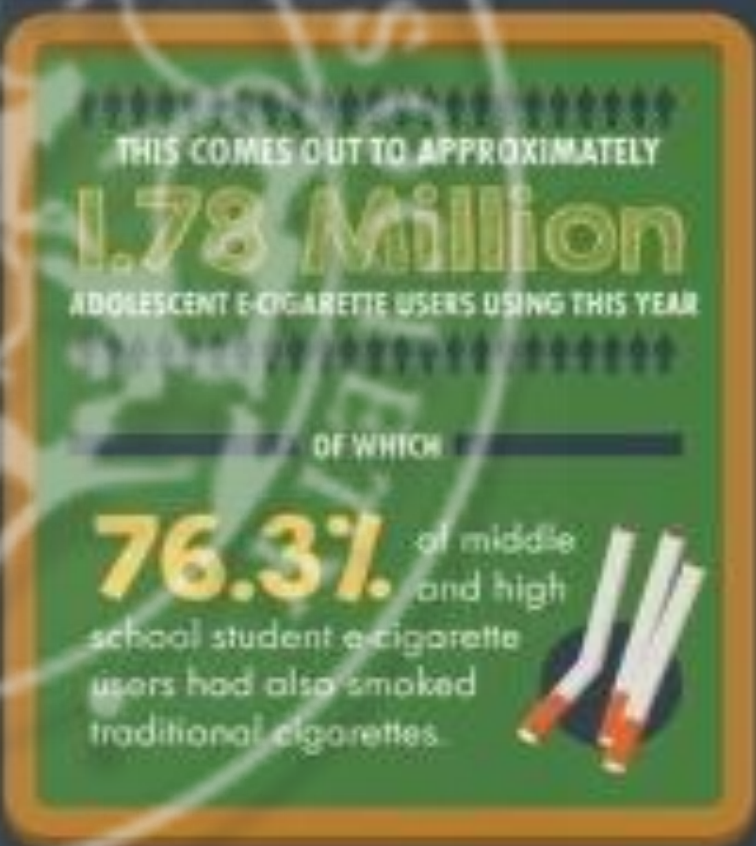


Nicotine can affect brain development in children and teens, teaching your teen the negative effects early could make the difference.

The Centers for Disease Control and Prevention recently reported that the use of e-cigarettes by youth doubled in just one year from 2011 to 2012.



Some e-cigarettes have candy flavoring, which could make them more appealing to someone who has not smoked before, especially teens.



E-cigarettes don't leave a smell like tobacco so it's going to be harder to know if your teen is vaping.



Constituents of e-liquids:

HUMECTANTS

- **Propylene glycol**: general recognized as safe (GRAS)
 - Acceptable for use in flavorings, drugs, cosmetics and as direct food additive
 - Few human studies for inhalation, however has been used as a tobacco humectant historically
 - Can cause eye and respiratory irritation
- **Vegetable glycerin**: generally recognized as safe (GRAS)
 - When heated and vaporized, can form acrolein, which can cause upper respiratory irritation

Constituents of e-liquids

NICOTINE

- Not present in all e-liquids
- Nicotine effects: low doses
 - Its a neural stimulant at low doses and a depressant at high doses
- Nicotine overdose
 - Excess: nausea and vomiting, excessive salivation, abdominal pain, pallor, sweating, hypertension, tachycardia, ataxia, tremor, headache, dizziness, muscle fasciculations, and seizures
 - Death: several case reports of suicide by nicotine

How much nicotine Do you get per puff?

- Depends on many factors :-
 - temperature of the atomizer
 - how much juice is atomized
 - size of the atomized droplets
 - depth of the “puff”
 - concentration of the e-juice
- * Large droplets will deposit in the oropharynx and upper airway (venous absorption)
- * Small droplets can get deeper –into alveoli for arterial absorption



Constituents of e-liquids

FLAVORINGS

E-cigarette liquid



Flavors are **KNOWN** to be appealing to youth
As shown, flavors are a common reason for teens to vape

- Different flavors may have gene-altering effects on the cells in the delicate lining of the respiratory tract.
 - i.e. Cinammon – cinnamaldehyde
 - Butter flavors-butter diacetyl
 - “Bronchitis Obliterans”, “Popcorn Workers Lung”
- GRAS – for eating, but not safe when inhaled!

METTALIC NANO PARTICLES

Teens underestimate the powerful
addictive effect of nicotine.

Immediate health effects of
smoking: decreased athletic
performance, activity level,
and endurance

CVS damage, early signs of
abdominal aortic atherosclerosis.

What are the Public Health Harms?

- Second-hand vapor is NOT just water vapor
 - Emit variable levels of nicotine (1/10th that of cigarettes), plus fine particles of similar size to that of cigarettes, and comparable concentration of fine particles
 - Emit low levels of other toxins: formaldehyde, acetaldehyde, metals

Progression to Smoking Cigarettes

E-cigarettes and Nonsmoking Youth



In 2013, more than a **quarter million** middle and high school students **never** smoked regular cigarettes but **had** used e-cigarettes...

3 times
as many as 2011!



Among nonsmoking youth, those that have ever used e-cigarettes have greater intentions to smoke conventional cigarettes than those who have never used e-cigarettes

Bunnell RE, Agaku IT, Arrazola RA, et al. Nicotine Tob Res 2015

Among Youth, E-cigarette Use May Lead to Conventional Cigarette Use

- ❑ **High school students who had never smoked but reported ever using e-cigarettes at baseline were 2.7 times more likely to start using combustible tobacco after 1 year compared with high school students who never used e-cigarettes**
- ❑ **U.S. adolescents and young adults who had never smoked but used e-cigarettes at baseline were 8.3 times more likely to progress to cigarette smoking after 1 year than nonusers of e-cigarettes**



Leventhal AM, Strong DR, Kirkpatrick MG, et al. JAMA 2015
Primack BA, Soneji S, Stoolmiller M, et al. JAMA Pediatr 2015

Desensitization? Teens who vape change their perception of cigarette risk

- Youth who vaped were 4.7x more likely to change their perception of the dangers of smoking *away* from 'great risk', among those who had never smoked at baseline.
- “Youth who begin to vape primarily to experiment and because vaping tastes good (the most common reasons for vaping) may detect no immediate health consequences and conclude that the dangers of smoking are exaggerated.”

VAPE EXPLODES!!!

A 17-year-old says he suffered third-degree burns to his leg when a vape pen battery exploded in his pocket.



The teenager's left leg was charred from his thigh to his calf, and he suffered second- and third-degree burns.



KDVR / Via kvdr.com



Go Fund Me / Via gofundme.com

http://www.buzzfeed.com/stephaniemcneal/vape-pen-horror#_fj0pJ906Z

Feb 29, 2016

First US Child Death from ENDS Solution December 2014



- Uncapped bottle of concentrated nicotine 100 mg/mL ENDS solution
- Child found with bottle
- Seized and never regained consciousness
- Coroner cause of death: cardiac arrhythmia from nicotine ingestion

Source: TimesUnion, April 13 2015

Electronic Nicotine Delivery Systems: Take Home Points

- ENDS are the most common tobacco product used by youth
- ENDS solution and aerosol have been found to contain toxicants and carcinogens, and may contain nicotine that can lead to addiction
- ENDS companies are marketing their products with claims that are not scientifically validated

ENDS : Bottom Line

- E-cigarettes are NOT SAFE
 - Clean Air is safe.
- E-cigarettes may lead to cigarette use.
- Best course of action: **DON'T START**, and educate your friends and family, since now you know a lot about e-cigarettes.

**WE HOLD OUR FUTURE IN OUR HANDS
AND IT IS OUR CHILDREN**



**WE CAN
MAKE THE NEXT GENERATION TOBACCO-FREE**

THANK YOU



REFERENCES

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2015 Global Adult Tobacco Survey and Global Youth Tobacco Survey

FCTC August 2016 Technical Report on Electronic Nicotine Devices and Electronic Non-Nicotine Devices