

# Vaping and E-Cigarettes



# Purpose

- The purpose of this presentation is to educate and enhance the understanding of vaping dangers for students
- Students are being sent this presentation if they have a violation related to use and/or possession of a vaping device such as a JUUL
- Be sure to read through the information and complete the review on the last page

# Resources

Information from this presentation comes from:

[Stanford Medicine - Tobacco and Nicotine Prevention Toolkit](#)



**Stanford**  
**M E D I C I N E**

Tobacco Prevention Toolkit  
*Modules for tobacco and nicotine education*

# How do they work?

- Using a battery that is activated when someone inhales, a heating element “vaporizes” the liquid from the pod or cartridge
- While the “vapor” that is produced can appear harmless and even be flavored, it still contains dangerous chemicals
- Additionally, companies have targeted a younger audience with different flavors and design features

# Definitions



**GAS:** a substance with indefinite expansion. When you let a gas out of its bottle, it will usually keep spreading out until it's completely mixed with the air.



**VAPOR:** it can mean the same as gas, but it may also be used to describe a visible exhalation, such as steam or fog. "Vapor" isn't as precise a term as "gas" or "aerosol."



**AEROSOL:** a mixture of liquid particles suspended in a gas. Instead of just mixing with the air like a pure gas, aerosols can leave drops behind.

What comes out of a vaping device?

**It's an Aerosol, Not a Vapor**

---



# What's the difference?

- A “vapor” implies that it is harmless and just like steam from water
- An aerosol indicates that it has chemicals and other particles that are actually suspended in the gas
- The term “vapor” along with various flavors are purposely used to seem harmless and nontoxic



# What's in E-Cig Aerosol?

Bold items are listed  
as “Harmful” or  
“Potentially Harmful”  
according to the FDA

<ul style="list-style-type: none"> <li>• Propylene glycol</li> <li>• Glycerin</li> <li>• Flavorings (many)</li> <li>• <b>Nicotine</b></li> <li>• <b>NNN</b></li> <li>• <b>NNK</b></li> <li>• <b>NAB</b></li> <li>• <b>NAT</b></li> <li>• Ethylbenzene</li> <li>• Benzene</li> <li>• Xylene</li> <li>• Toluene</li> <li>• Acetaldehyde</li> <li>• Formaldehyde</li> <li>• Naphthalene</li> <li>• Styrene</li> <li>• Benzo(b)fluoranthene</li> </ul>	<ul style="list-style-type: none"> <li>• Chlorobenzene</li> <li>• Crotonaldehyde</li> <li>• Propionaldehyde</li> <li>• Benzaldehyde</li> <li>• Valeric acid</li> <li>• Hexanal</li> <li>• Fluorine</li> <li>• Anthracene</li> <li>• Pyrene</li> <li>• Acenaphthylene</li> <li>• Acenaphthene</li> <li>• Fluoranthene</li> <li>• Benz(a)anthracene</li> <li>• Chrysene</li> <li>• Retene</li> <li>• Benzo(a)pyrene</li> <li>• Indeno(1,2,3-cd)pyrene</li> </ul>	<ul style="list-style-type: none"> <li>• Benzo(ghi)perylene</li> <li>• Acetone</li> <li>• Acrolein</li> <li>• Silver</li> <li>• <b>Nickel</b></li> <li>• Tin</li> <li>• Sodium</li> <li>• Strontium</li> <li>• Barium</li> <li>• Aluminum</li> <li>• <b>Chromium</b></li> <li>• Boron</li> <li>• Copper</li> <li>• <b>Selenium</b></li> <li>• <b>Arsenic</b></li> <li>• Nitrosamines,</li> <li>• Polycyclic aromatic hydrocarbons</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Cadmium</b></li> <li>• Silicon</li> <li>• Lithium</li> <li>• <b>Lead</b></li> <li>• Magnesium</li> <li>• Manganese</li> <li>• Potassium</li> <li>• Titanium</li> <li>• Zinc</li> <li>• Zirconium</li> <li>• Calcium</li> <li>• Iron</li> <li>• Sulfur</li> <li>• Vanadium</li> <li>• <b>Cobalt</b></li> <li>• Rubidium</li> </ul>
--	--	--	---

# Where Else Can You Find These Chemicals?

Propylene glycol → Antifreeze



Acetone → Nail Polish Remover



Ethylbenzene → Paints, Pesticides



Formaldehyde → Embalming

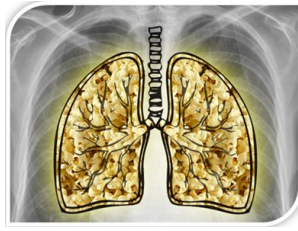


Nicotine → Cigarettes



Rubidium → Fireworks

# Chemicals (cont.)



A UCSF study by Dr. Mark Rubinstein compared teenagers who vape and teens who do not vape

Those who vape showed much higher levels of harmful chemicals than those who do not vape

Chemicals commonly found in teenagers who vape included:

- Acrylonitrile (highly poisonous compound used to make plastic and rubber)
- Diacetyl (chemical blamed for “popcorn lung”- damages lungs causing shortness of breath and coughing - this causes lasting damage to lungs)

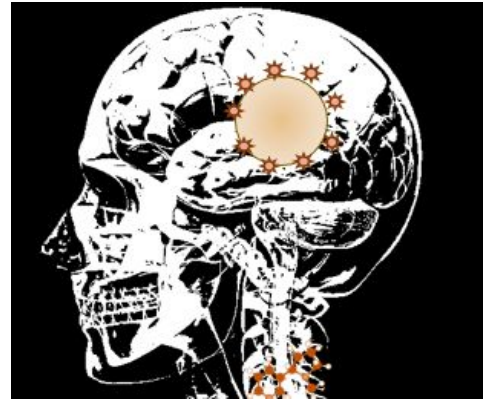
# Nicotine

- The nicotine content in a JUUL pod is approximately 0.7 mL, which is the equivalent to one entire pack of cigarettes
- It is important to realize that there often is more nicotine in these clouds of “vapor” than in a traditional cigarette
- Nicotine is a highly addictive stimulant. A person can become addicted to nicotine after just one or two uses
- Nicotine quickly changes brain chemistry and leaves the brain craving more



# Nicotine Addiction

Nicotine causes a release of dopamine (a pleasure chemical) to give temporary feeling of pleasure. The problem is the brain then produces less dopamine expecting to get it from nicotine. In turn, a person struggles to have natural feelings of pleasure and needs nicotine to feel “normal”



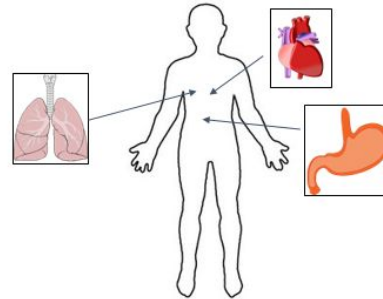
# Nicotine (cont.)

Once the brain goes without nicotine and the level of nicotine drops quickly, the body has a strong craving for nicotine

This causes a slight panic state that makes logical decision more difficult

Finding nicotine becomes the body's top priority

Additionally, Nicotine can cause a faster heartbeat and activate your “fight or flight” response quicker than normal



# Review

- While marketed to be appealing and “safe”, vaping can be just as dangerous as other inhalants
- Vapes actually give off aerosol, not “vapor”, meaning it has harmful chemicals that can cause long term damage
- Nicotine addiction is a very real issue related to vaping, it can only take a couple of uses to become addicted and leave your body needing to have it on a regular basis
- Recognizing the hold Nicotine can have on your body, please reach out to a counselor, parent, or any staff member if you need help beating an addiction