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**Miles To Go**

Drug Abuse Prevention Education  
Research, Lectures, Books

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Simplifying A Complex Subject  
**Jonathan Scott**

THE UNIVERSITY OF



CHICAGO

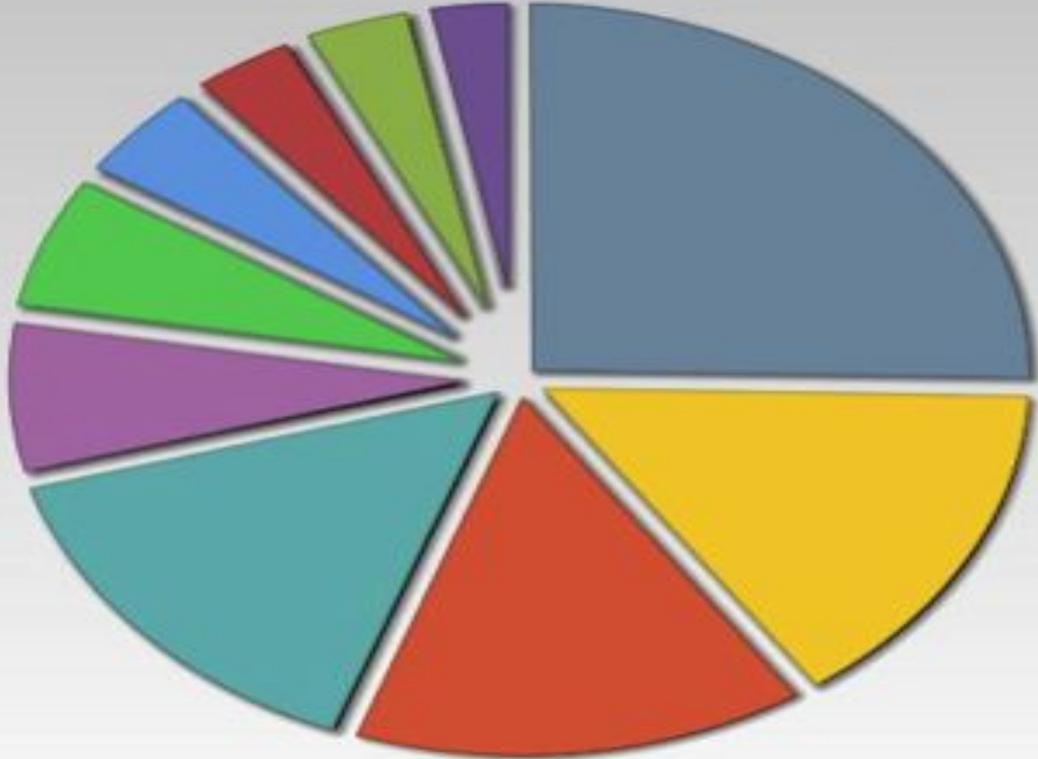
*2016 Llewellyn John and Harriet Manchester Quantrell Award  
for Excellence in Undergraduate Teaching*

*“It would be difficult to design a  
better drug to promote addiction.”*

Dr. Dan McGehee, The University of Chicago



# Distribution of patents issued for e-cigarettes



PHILIP MORRIS INC    REYNOLDS TOBACCO CO R    ALEXZA PHARMACEUTICALS INC    PHILIP MORRIS PROD    RUYAN INVEST HOLDINGS LTD  
HON LIK    PHILIP MORRIS USA INC    JAPAN TOBACCO INC    PHILIP MORRIS    FONTEM HOLDINGS 1 B V

Hon Lik: Inventor    Ruyan Invest: Imperial Tobacco    Fontem Holdings: Imperial Tobacco



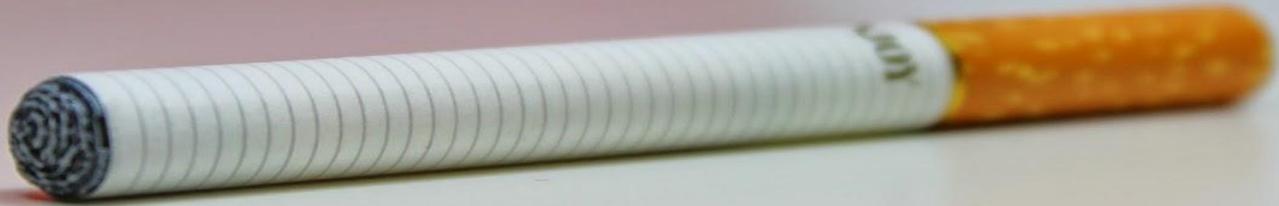
**There are currently over 8,000 flavors**

# The Original Modern Era E-cigarette

China, 2004



Initially, the goal was to make the e-cigarette look like a conventional product.



Once they figured out that their real market wasn't just current adult smokers, they expanded the product line and changed the terminology to limit or alter their association with cigarettes and conventional smoking.





voltage



Billet  
Box

Li-ion Rechargeable 3.7V  
ICR 123 750mAh

Made in China

RoHS

Li-ion Rechargeable 3.7V  
ICR 123 750mAh (2.8Wh)

Made in China

RoHS

BB

rev-3.

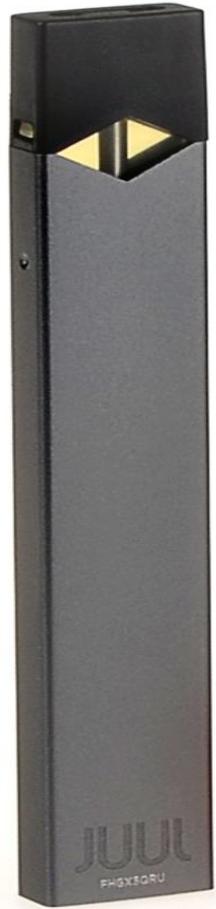
Hand & Robot  
made,

in the

USA

20

14



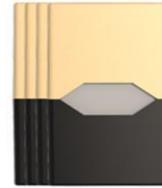
Juul combines high-tech looks with a nicotine salt delivery system.



cool  
mint



fruit  
medley



creme  
brulee



virginia  
tobacco





**EZvapebuy**



[ezvapebuy.en.alibaba.com](http://ezvapebuy.en.alibaba.com)

**NicoStick**







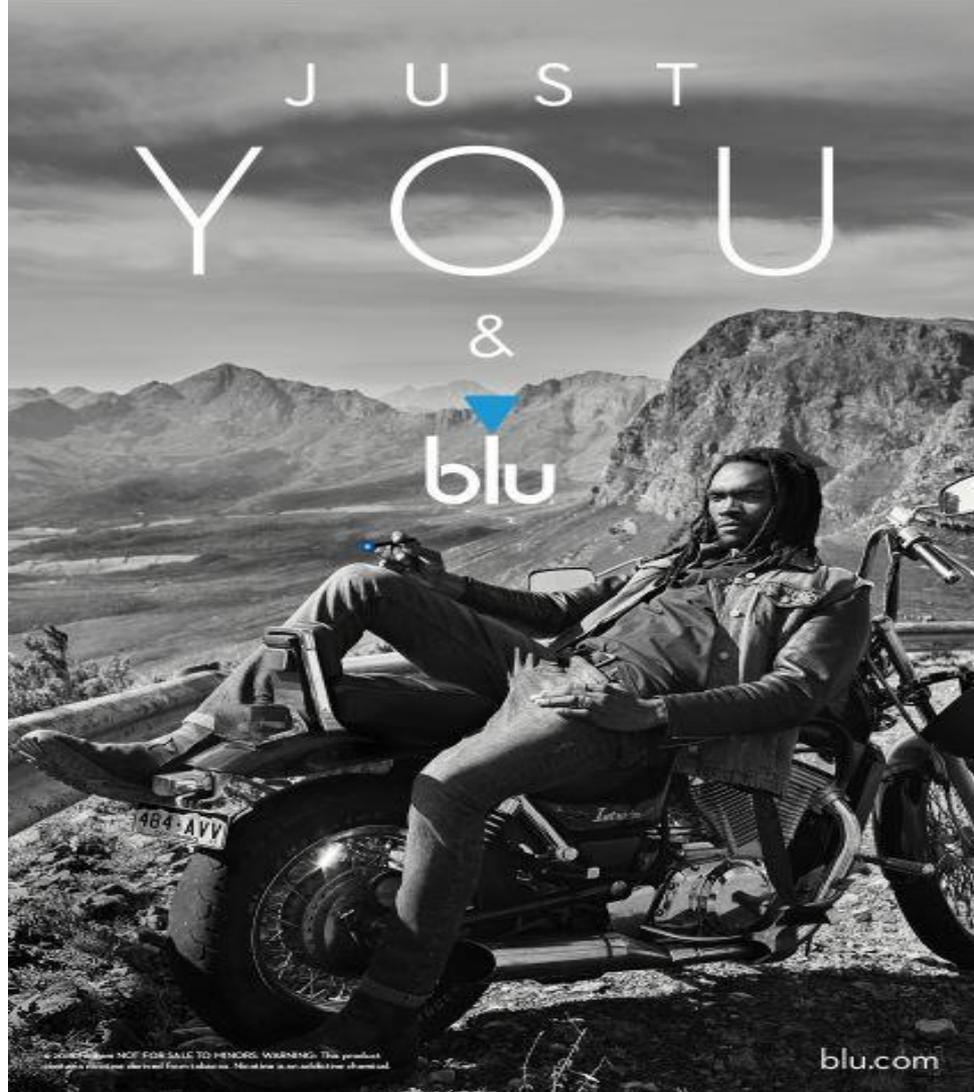
SUORIN AIR



J U S T  
Y O U

&

blu



© 2008 Blu. NOT FOR SALE TO MINORS. WARNING: This product contains nicotine derived from tobacco. Nicotine is an addictive chemical.

[blu.com](http://blu.com)



J  
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blu  
E-Cigarettes

blu.com

# Study: Just One E-Cigarette With Nicotine Can Cause Heart Damage in Nonsmokers

September 28, 2017

They found participants had a pattern of abnormal heart rate variability, indicating increased adrenaline levels, after they used the e-cigarette with nicotine. They determined the increased levels were due to the inhaled nicotine and not the non-nicotine components of the e-cigarette aerosol, Newsweek reports.

“These findings challenge the concept that inhaled nicotine is benign, or safe,” senior study author Dr. Holly Middlekauff of the David Geffen School of Medicine at UCLA said in a news release.

# **E-cigarettes and heavy metals**

- Both the e-liquid and the Poly-fil fibers that are used to absorb the e-liquid for heating and conversion to an aerosol come into contact with heating elements that contain heavy metals (tin, nickel, copper, lead, chromium).
- E-cigarette fluid containing tin was cytotoxic to human pulmonary fibroblasts.
- E-cigarette aerosol also contained metals, including nickel, 2 to 100 times higher than found in Marlboro cigarette smoke.
- The nickel and chromium nanoparticles possibly originated from the heating element.
- These metal nanoparticles can deposit into alveolar sacs in the lungs, potentially causing local respiratory toxicity and entering the bloodstream.

# E-Cigarettes and Nanoparticles

- E-cigarettes deliver nicotine by creating an aerosol of ultrafine particles.
- There is strong evidence that frequent low or short-term levels of exposure to fine and ultrafine particles from tobacco smoke or air pollution can contribute to pulmonary and systemic inflammatory processes and increase the risk of cardiovascular and respiratory disease and death.
- Higher e-liquid nicotine content was associated with higher particle numbers in the resulting aerosol.
- E-cigarette particle size distribution was similar to that of conventional cigarettes, with some e-cigarettes delivering more particles than conventional cigarettes.

# The headlines aren't good:

**Cancer-causing benzene found in e-cigarette vapors operated at high power**

Date: March 8, 2017

Source: Portland State University

**E-cig refills contain irritants, and people who smoke and use e-cigs suffer more symptoms**

Date: September 10, 2017

Source: European Lung Foundation

**E-cigarette use accelerates effects of cardiovascular aging**

Date: August 12, 2017

Source: American Physiological Society (APS)

**Increased Cardiac Sympathetic Activity and Oxidative Stress in Habitual Electronic Cigarette Users--Implications for Cardiovascular Risk**

**Trauma surgeon seeing rise in burns from electronic cigarettes**

Date: April 27, 2017

Source: University of Arizona

NEW AT 5:00

5:06 44°  
 **2**  
CBSNewYork.com

**An NIH study, published in the journal**

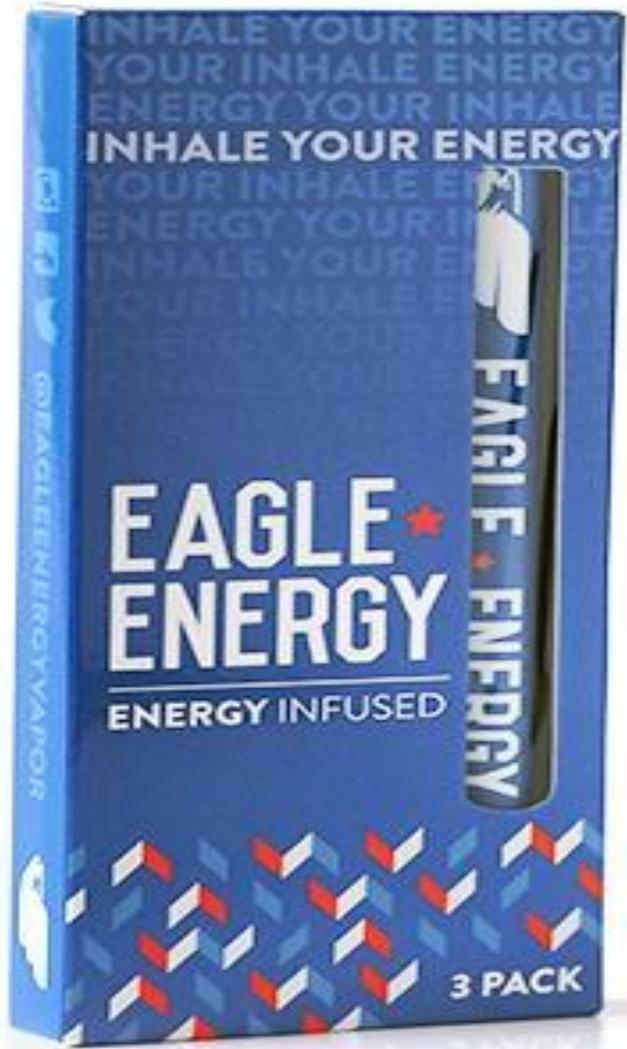
***Pediatrics*, December, 2017:**

**Teens Vaping E-Cigarettes Up To 7 Times  
More Likely To Smoke Later**

**The National Academies of Science,**

**Engineering, and Medicine, January 23, 2018:**

**Teens who use e-cigarettes are more likely to  
try smoking.**



Current research into e-cigarette technology points to unsafe levels of fine and ultra-fine particulate matter levels in the inhaled product —even in varieties that contain no nicotine.

# Vitamin

ELECTRONIC CIGARETTE.

- Nicotine-Free
- No Smoke, Second Hand Smoke, or Tar
- Just Vitamins + Flavored Vapor
- 500 Puffs per VitaCig  
(Disposable/Recyclable)
- Only \$5 per VitaCig
- Five Exciting Flavors:  
Relax, Refresh, Energize,  
Calm, Grace



Every VitaCig includes the following base Vitamins A, B, C, E, and CoQ10 (Ubidecarenone).

# Pax Labs



Dried Leaf



Dried Leaf and Extracts



Pods



RELAX

ALCHEMY

ALCHEMY

by DARK HEART



EXPERIENCE

Relax

BOTANICALS

A soothing elixir of lavender  
& chamomile melts  
away stress

VARIETY

Indica

30% THC  
NET WT. 1/4 GRAM

# This Is Your Brain On Weed

## Hypothalamus:

Involves appetite, hormonal levels, sexual behavior  
THC increases appetite

## Nucleus Accumbens:

Involves motivation and reward  
THC affects euphoria

## Neocortex:

Responsible for complex thinking, feeling, movement, sensory information.  
THC alters thinking, judgment and sensation

## Basal Ganglia:

Involves motor control and planning.  
THC Slows reaction time

## Amygdala:

Anxiety, emotion, fear.  
THC causes panic/paranoia

## Spinal Cord:

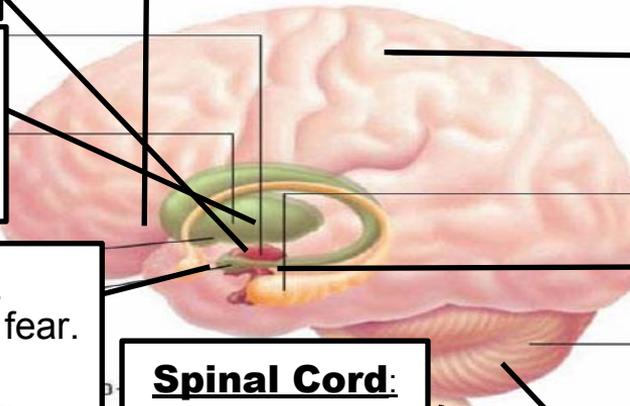
Transmits information between brain and body  
THC important in the vomiting reflex and alters pain sensitivity

## Hippocampus:

Involves memory, learning, sequence and places.  
THC impairs memory and learning

## Cerebellum:

Involves motor control and balance  
THC impairs coordination.



August 9, 2014

American Psychological Association (APA)

## Regular marijuana use bad for teens' brains, study finds

"It needs to be emphasized that regular cannabis use, which we consider once a week, is not safe and may result in addiction and neurocognitive damage, especially in youth," said Krista Lisdahl, PhD, director of the brain imaging and neuropsychology lab at the University of Wisconsin.

Abnormalities in the brain's gray matter, which is associated with intelligence, have been found.

# The Lancet Psychiatry—October 29, 2014

Teens who smoke marijuana daily are...

- 60% less likely to complete high school than those who never use.
- 60% less likely to graduate college.
- 18 times more likely to become dependent on marijuana.
- 8 times more likely to use other illegal drugs in the future.
- 7 times more likely to attempt suicide.

Currently, about 5.9% of seniors in HS smoke weed daily, up from 2% in the 1980's.

# The Lancet Psychiatry—October 29, 2014

Teens who smoke *just once per month* are not free from consequence:

By age 25, they are:

- 38% less likely to graduate high school or earn a college degree.
- 2.5 times more likely to attempt suicide.
- 4 time more likely to be addicted to cannabis.
- 3 times more likely to have used other illegal drugs.

# Longtime Marijuana Use Leads to Downward Economic Spiral

*UC Davis, March 23, 2016*

Regular cannabis users experience:

- Downward social mobility and more financial problems.
- More antisocial behaviors at work, such as stealing money or lying to get a job.
- More relationship problems, such as intimate partner violence and controlling partner abuse.
- On average, persistent cannabis users from middle class origins attained lower adult socioeconomic status than did their parents.

**Thursday, 28 January, 2016**

# **College Marijuana Use Linked With Skipped Classes, Lower Grades, Late Graduation**

A new study finds marijuana use in the first year of college can lead to students missing classes.

The more frequently a student uses marijuana, the more they tend to skip class, earn lower grades, and graduate later.

Researchers at the University of Maryland School of Public Health followed 1,117 college students for eight years to test the direct and indirect effects on marijuana use on GPA and time to graduation.

April 15, 2014

## Recreational Pot Use Harmful to Young People's Brains

**A new study from medical researchers at Harvard and Northwestern shows that 18- to 25-year-olds who smoke marijuana—even just recreationally!—had marked abnormalities in areas of their brains that regulate emotion and motivation.**

“This is a part of the brain that you absolutely never ever want to touch,” Breiter asserts. “I don’t want to say that these are magical parts of the brain — they are all important. But these are fundamental in terms of what people find pleasurable in the world and assessing that against the bad things.”

January 23, 2014

## Why It's Still a Big Deal If Your Teen Smokes

**Pot** Northwestern University's Feinberg School of Medicine

“Marijuana is the ideal compound to screw up everything for a kid,” says Hans Breiter, a professor of psychiatry and behavioral science and a senior author of the study. “If you’re an athlete, a chess player, a debater or an artist, you need working memory, and marijuana hurts that brain circuitry.”

The earlier the drug was taken up, the worse the effects on the brain.

# Butane Hash Oil

Also known as BHO, wax, earwax, dabs, shatter, budder,

honeycomb,

Strong marijuana regularly exceeds 20-25% THC content, but BHO can exceed 90%.

Some users find the resulting high extremely overwhelming and unpleasant.



# **Cancerous toxins linked to cannabis extract**

September 26, 2017

Portland State University

Researchers have found benzene and other potentially cancer-causing chemicals in the vapor produced by butane hash oil, a cannabis extract.

*Journal of Child Psychology and Psychiatry*

*July 5, 2017*

# **Marijuana use linked to greater psychosis risk in teens**

“Our findings confirm that becoming a more regular marijuana user during adolescence is, indeed, associated with a risk of psychotic symptoms.”

Josiane Bourque, Department of Psychiatry at the University of Montreal



Butane hash oil: nobody  
ever died—  
they just thought  
they were going to.

Extreme panic and anxiety attacks are common. One official described *'overdoses,' which...involve extreme discomfort, to the point of freaking out for long periods of time.'*

Teen/adolescent alcohol use is linked with or causes the following:

- Increased rates of adult alcoholism/alcohol dependence.
- Increased rates of binge drinking.
- Cognitive impairment/poor academic performance.
- Increased risk of physical/sexual assault.
- Higher levels of motor vehicle accidents/fatalities.
- Higher rates of illicit drug use/tobacco use.
- Higher rates of suicidal ideation/suicide attempts.
- Increase risk of unprotected sexual activity.
- Dysfunctional brain development re: myelination, hippocampal size and function, working memory.

MOTHERS AGAINST DRUNK DRIVING  
**PARENT HANDBOOK**  
TALKING WITH YOUR HIGH SCHOOLER  
ABOUT ALCOHOL

**POWER of  
PARENTS**

**madd**<sup>®</sup>



<https://www.madd.org/the-solution/power-of-parents/>

# Why do teens use?

1. Stress, especially stress caused by school.
2. Lack of clear intrinsic goals.
3. Low levels of parental containment.
4. Brain development.
5. Lack of other options.
6. A sense of entitlement.
7. Parental confusion over what is appropriate.

# **"I can, therefore I must": Fragility in the upper-middle classes**

**Suniya S. Luthar**

**Arizona State University**

**[https://www.researchgate.net/publication/285221097\\_I\\_can\\_therefore\\_I\\_must\\_Fragility\\_in\\_the\\_upper-middle\\_classes](https://www.researchgate.net/publication/285221097_I_can_therefore_I_must_Fragility_in_the_upper-middle_classes)**

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