

▲ 0.96%

▲ 2.238%

▲ 0.37%



| U.S.

# Study Finds E-Cigarettes Contain Chemical Tied to 'Popcorn Lung'

Harvard researchers say 39 of the 51 flavors sold by leading brands contained diacetyl, which has been linked to severe respiratory diseases



A woman adds flavor to a vaporizer while waiting for customers at an e-cigarette shop in New York in June. PHOTO: REUTERS

By **SAABIRA CHAUDHURI**

Dec. 9, 2015 12:14 p.m. ET

**27 COMMENTS**

A new Harvard University study has cast doubts about the safety of flavored e-cigarettes, many of which have been found to contain a chemical tied to a respiratory disease commonly known as “popcorn lung.”

Researchers at the Harvard T.H. Chan School of Public Health tested 51 e-cigarette flavors sold by “leading e-cigarette brands.” Of these they found that 39 of the 51 flavors contained diacetyl—a chemical commonly used to add flavorings like butter, caramel, strawberry and butterscotch—that has been linked to bronchiolitis obliterans and other severe respiratory diseases.

The U.S.’s Occupational Safety & Health Administration describes bronchiolitis obliterans as occurring when small airways become inflamed and scarred, resulting in the thickening and narrowing of the airways.

The researchers focused their study, which was published by the National Institute of Environmental Health Sciences, on e-cigarettes sold by the largest cigarette companies and on flavors they thought would be appealing to children,

teenagers and young adults.

The largely unregulated e-cigarette industry has been a focal point for controversy in recent years, with some health bodies saying they're a gateway for new or underage smokers, and that flavored e-cigarettes in particular could attract younger smokers. An August study in the Journal of the American Medical Association found that ninth-graders who used electronic cigarettes were more likely to smoke cigarettes, cigars or hookahs than peers who never tried the battery-powered devices.

U.K. antitobacco group ASH and Public Health England, along with the tobacco industry, have billed e-cigarettes as a way to reduce the incidence of cigarette use.

Popcorn lung, the disease associated with inhaling diacetyl, got its name due to reports in the early 2000s of lung disease in microwave-popcorn workers. The workers were exposed to butter-flavoring chemicals, of which diacetyl was the most prominent.

The Harvard researchers, who released their study on Tuesday, noted that the heating, vaporization and inhalation of flavoring chemicals in e-cigarettes makes smokers' exposure similar to that of workers in the microwave-popcorn industry.

The study also found two other chemicals—2,3 pentanedione and acetoin—respectively present in 23 and 46 of the 51 flavors it tested. Roughly 92% of the e-cigarettes it tested had one of the three chemicals present.

According to the study, two companies stated their products didn't contain diacetyl when it was found during testing that they in fact did. Across the websites and packaging for all of the e-cigarette brands studied, the researchers found no health warnings about diacetyl.

The study evaluated flavors from three large cigarette companies, a large independent e-cigarette company and three e-cigarette distributors. It didn't name the companies.

"We acknowledge that diacetyl shouldn't be used in e-cigarettes, but equally diacetyl is found in cigarettes at very significant levels, so obviously there is a harm-reduction aspect to switching to e-cigarettes," said Tom Pruen, chief scientific officer for the U.K.-based Electronic Cigarette Industry Trade Association.

E-cigarettes are currently largely unregulated, although a 2014 Food and Drug Administration proposed rule is seeking to expand the legal definition of tobacco products to include e-cigarettes.

In the U.K. they will fall under the revised EU Tobacco Products Directive starting in May, which will set out safety and quality requirements for e-cigarettes.

Write to Saabira Chaudhuri at [saabira.chaudhuri@wsj.com](mailto:saabira.chaudhuri@wsj.com)

## SHARE YOUR THOUGHTS

There are 27 comments.

[Sign In to comment](#)

«

Newest



JEFF CHAPPLE

I call your attention to the following. You obviously didn't do your homework

How The Media Totally Exaggerated Study On Risk Of 'Popcorn Lung' From E-Cigarettes

A Harvard study claiming most e-cigarette brands expose users to harmful chemicals omits critical information and exaggerates the risks of flavored e-cigarettes, according to tobacco control experts.

The study, published in the [journal Environmental Health Perspectives](#), analyzes a host of e-liquid flavors to discover levels of potentially dangerous chemicals diacetyl, acetyl propionyl, and acetoin.

The researchers found one or more of the three chemicals in 92 percent of the 51 unique flavors of e-liquid. Diacetyl is identified in 39 of 51 flavors – 75 percent of the total.

Following the study, an array of media outlets focused on the presence of diacetyl, a chemical used for food flavoring that if inhaled in large amounts can lead to a severe respiratory disease – bronchiolitis obliterans.

Bronchiolitis obliterans is commonly known as “popcorn lung,” because it was identified in workers who inhaled the artificial butter flavor used to make microwavable popcorn. A number of cases of popcorn lung have been found to be so severe in some patients that they have required a full-blown lung transplant.

The Harvard study whipped up a storm of hyperbolic headlines including “[Harvard study finds that E-cigarette flavors cause lung disease](#)” and “[Chemicals in Flavored E-Cigarettes Tied To 'Popcorn Lung' Disease.](#)”

But the headlines may be shielding the truth about the potential risk of popcorn lung from using e-cigarettes. [Dr. Konstantinos Farsalinos](#), an expert on e-cigarette research and an opponent of putting diacetyl in e-liquids, writes, “tobacco cigarette smoke contains high levels of diacetyl and acetyl propionyl, on average 100 and 10 times higher,” compared to average e-cigarette exposure.

Farsalinos draws the disparity between tobacco and e-cigarettes from research conducted by himself and colleagues published in the journal [Nicotine and Tobacco Research](#) in 2014.

Not only are levels of diacetyl far higher in tobacco smoke than e-cig vapor, but the levels of dangerous compounds found in many of the products studied “are absolutely minimal, and it is not expected to raise any concerns about human health effects,” according to Farsalinos.

Farsalinos adds that the researchers fail to mention the presence of these compounds in tobacco cigarette smoke. “This omission creates the impression that e-cigarettes are exposing users to a new chemical hazard while in reality their exposure will be much lower compared to smoking.”

He concludes that the study is guilty of “creating false impressions and exaggerates the potential risk from diacetyl and acetyl propionyl exposure through e-cigarettes.”

But even more concerning for those who may want to exaggerate the risks of using e-cigarettes, is that even tobacco smoke has no identifiable link with any cases of popcorn lung.

According to [Critical Reviews in Toxicology](#), "smoking has not been shown to be a risk factor for bronchiolitis (popcorn lung)."

Since tobacco smoke contains far higher levels of diacetyl than flavored e-cigarettes and there has not been a single confirmed case of a smoker contracting popcorn lung, the likelihood that vapers will contract this particular lung disease is minimal, to say the least.

Bill Godshall, executive director of Smokefree Pennsylvania and a long-time anti-smoking activist, is even more damning in his criticism of the Harvard study.

"This is yet another Department of Health and Human Services-funded study that is intended to deceive and scare the public about vaping to lobby for Food and Drug Administration's deeming ban.

"While finding zero evidence of 'Popcorn Lung,' the authors are trying to create a public panic," Godshall tells The Daily Caller News Foundation. Pro-vaping groups are also quick to point out that few people have claimed e-cigarettes are completely free of any health risk.

Greg Conley, president of the American Vaping Association tells TheDCNF, "in the debate over vaping, the concept of relative risk should not be ignored. Vapor products are a far safer alternative to smoking, but it has long been recognized that they are not 100 percent safe.

"Earlier this year, a dozen public health groups endorsed Public Health England's briefing estimating vaping to be approximately 95 percent less hazardous than smoking. Their assessment left room for some unknown risk from ingredients like flavorings."

[Follow Guy on Twitter](#)

*Content created by The Daily Caller News Foundation is available without charge to any eligible news publisher that can provide a large audience. For licensing opportunities of our original content, please contact [licensing@dailycallernewsfoundation.org](mailto:licensing@dailycallernewsfoundation.org).*

---

10 days ago

---



Chauncey DePree

A scientist reported in "TobaccoPharm" has the knowledge to end the scourge of tobacco and acts on it.

[http://www.amazon.com/Tobacco-Pharm-Trust-One.../.../ref=sr\\_1\\_1...](http://www.amazon.com/Tobacco-Pharm-Trust-One.../.../ref=sr_1_1...)

Lucian Reimann embedded a virulent carcinogen in tobacco and released it into the environment. He vowed to do what all the effete do-gooders couldn't, or wouldn't; and he trusted no one and told no one what he was doing.

The sudden death of a healthy young man alerts Windsor Tobacco Company that its cigarettes are contaminated. The disease is a quick killer and mimics common oat cell lung cancer. Company executives try to conceal the deaths caused by the new super-virulent cancer while hunting for the source and a way to decontaminate nicotine. They become desperate when they learn that the contamination is deliberate and more widespread than initially thought. Smokers who

hear about the new danger and don't believe it, die.

12 days ago



Michael Bowen

Hmmm. Would have to see the "studies" since there is so much garbage science these days. For example, the fraudulent second-hand smoke studies used by EPA.

12 days ago

**SHOW MORE COMMENTS**

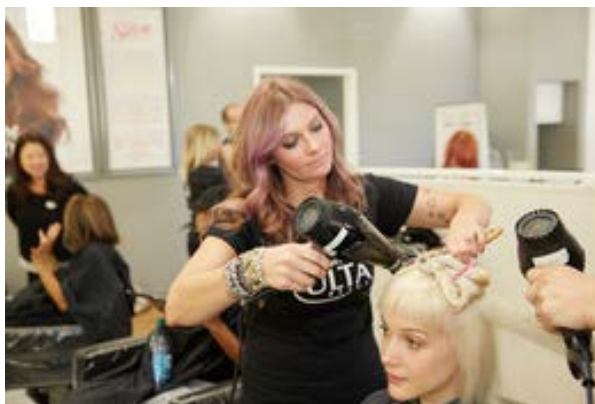
POPULAR ON WSJ

EDITORS' PICKS



**BUSINESS**

As RV Sales Revive, Buyers Leave the Frills Behind 🚐



**LIFE & STYLE**

The New Great Hair Regimen 🚿



**POLITICS**

The Evolution of Bush's Candidacy: From 'Tortoise' to Would-Be Trump Slayer 🎥



**BUSINESS**

Search for Elusive 'Yeti' Daunting for Holiday Shoppers 🎥



**TURNING POINTS**

Why Mom Believes in Santa 🎥



**PERSONAL TECHNOLOGY: REVIEW**

Can't Get Your Child Off the Internet? Here's Help



**MARKETS**

Online Lenders Pinched by Market Jitters 🎥



**LIFESTYLE**

How to Give Gifts That Will Last Past Christmas

## SPONSORED LINKS

---

- [Thyroid Hair Loss](#)
- [Respiratory Problems](#)
- [Respiratory Infections](#)
- [University Admission](#)

TOP «

Edition: U.S.

Text Size: Small

[Subscribe Now](#) [Sign In](#)

[WSJ Membership Benefits](#) [Download WSJ Apps](#) [Customer Center](#) [Legal Policies](#)

[Subscribe](#)

[Sign In](#)

n\_ m\_ v\_ w\_ y\_ - -

[Privacy Policy](#) |

[Cookie Policy](#) |

[Copyright Policy](#) |

[Data Policy](#) |

[Subscriber Agreement & Terms of Use](#) |

[Your Ad Choices](#) |

Copyright ©2015 Dow Jones & Company | , Inc. All Rights Reserved.