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Formaldehyde Exposure In Marijuana Vaping

By [News Staff](#) | June 12th 2017 11:35 AM | [Print](#) | [E-mail](#)

Formaldehyde sounds scary because it is for dead bodies. But it is also produced in our natural cellular respiration. Clearly "the dose makes the embalming fluid" but groups who want to scare people about diet soda whisper about its presence. And it is present, in levels that will be carcinogenic if you drink 7,000 sodas per day. More recently its presence in nicotine vaping liquid was being touted.

Given the medical marijuana fad, not to mention the rush for recreational use, it was only a matter of time before someone noted the presence of formaldehyde in it. What's the real story? There is a huge difference between hazard and risk. The risk is determined by exposure. The risks of cigarettes are huge while the risks of e-cigarettes and other smoking cessation techniques are still basically random chance. Marijuana, on the other hand, has similar toxic chemicals to cigarette smoke. The formaldehyde is likely the least concern.

The journal merits some suspicion, which makes it all the more bold they published it at all. Alternative medicine fans are far more likely than the evidence-based community to believe anything found in nature is more beneficial than real medicine. [The Journal of Alternative and Complementary Medicine authors say they found that one inhalation of the vapor produced by heating polyethylene glycol \(PEG\) 400](#) put an individual at risk for 1.12% of the daily formaldehyde exposure limit. The researchers tested four thinning agents commonly used to vaporize cannabis oil-propylene glycol, PEG 400, vegetable glycerin, and medium chain triglycerides and the levels of three compounds that have the potential for serious health effects in the vapors produced when the agents were heated to the temperature needed to vaporize cannabis oil.

"Users should be aware of potential harms of using vaporized cannabis oils and know what thinning agents are used in the products they consume, as we learn more about their effects when vaporized and inhaled," says Leslie Mendoza Temple, MD, Clinical Assistant Professor, The University of Chicago and specialist in Integrative Medicine, NorthShore Medical Group, Glenview, IL.

E-Cigarette Formaldehyde Exposure Well Below WHO Quality Guidelines

By [News Staff](#) | March 3rd 2016 06:34 AM | [Print](#) | [E-mail](#)

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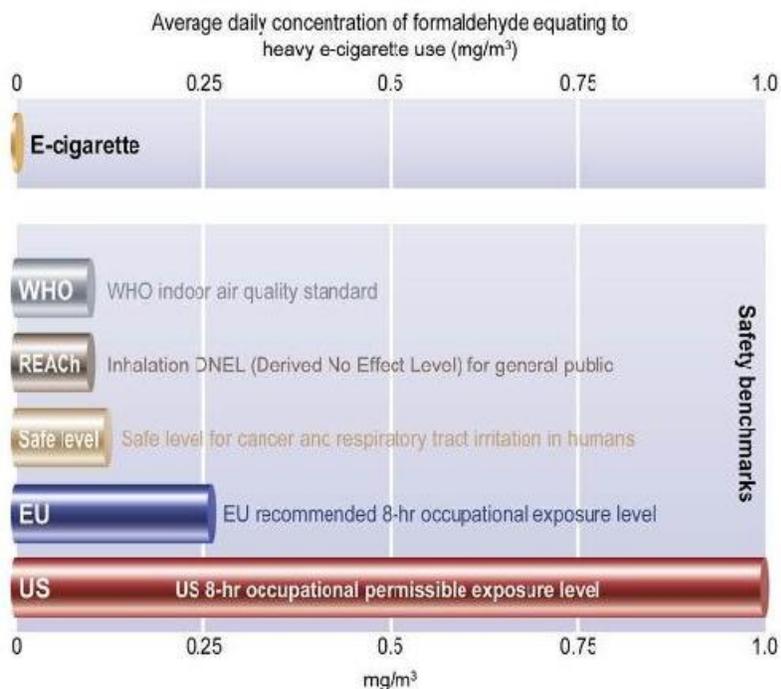
Formaldehyde is back in the news because a company called Lumber Liquidators has been found to have exposure levels higher than previously believed. While three times effectively zero is still zero, fundraising groups like Natural Resources Defense Council have pounced on the opportunity to promote fear and doubt and talk about EPA regulations they have conspired with lobbyists to create.

While your flooring is harmless, nature has more formaldehyde than you'll get in your house, e-cigarettes are a higher level of concern because the vapor is inhaled directly into lungs. A new study shows that the daily exposure to formaldehyde from three different types of e-cigarettes is well below the levels considered safe by the World Health Organisation (WHO) - at less than a sixth of the indoor air quality standard.

"In cigarette smoke, most formaldehyde is produced as the result of burning sugars naturally present in tobacco as well as added sugars and glycerol," explains Dr Sandra Costigan, Principal Toxicologist for electronic cigarettes at British American Tobacco, 'whereas in vaping products, it is generally produced as a thermal breakdown product of glycerol and propylene glycol (PG). "Glycerol and PG are used to make the e-liquid and dilute the nicotine and flavoring."

There has been a lot of material published recently on the amount of formaldehyde released from electronic cigarettes.

Formaldehyde is classified as a carcinogen by the International Agency for Research of Cancer and is thought to contribute to the development of tobacco-related disease. For this reason, there has been some concern over the possible health effects of inhaling formaldehyde released into the aerosol of e-cigarettes.



Formaldehyde Forms During Chemical Breakdown Of E-Cigarette Flavors

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Atmospheric scientists at the Desert Research Institute (DRI) have turned their attention toward the growing e-cigarette industry and found that toxic aldehydes, such as formaldehyde, are formed during the chemical breakdown of the flavored e-liquid during the rapid heating process (pyrolysis) that occurs inside e-cigarettes or electronic nicotine delivery systems (ENDS).

Since the dose makes the poison, is this a concern? Not really, but in the modern world of International Agency for Research on Cancer (IARC) hazard assessments, risk has become irrelevant and the presence of any compound, even in trace levels, is declared

carcinogenic if the levels are within seven orders of magnitude, so 10,000,000 to 1.

E-cigarette liquids have been marketed in nearly 8,000 different flavors, according to a 2014 report from the World Health Organization. U.S. Food and Drug Administration (FDA) surveys found that 16-percent of high school and 5.3-percent of middle school students tried e-cigarettes once in 2015, slightly more than cigarettes, making e-cigarettes the most commonly used tobacco-derived product among youth for the second consecutive year. In 2014, 12.6-percent of U.S. adults had ever tried an e-cigarette, and about 3.7-percent of adults used e-cigarettes daily or some days.

[The authors measured concentrations of 12 aldehydes in aerosols produced by three common e-cigarette devices.](#) To determine whether the flavoring additives affected aldehyde production during vaping, five flavored e-liquids were tested in each device. In addition, two unflavored e-liquids were also tested. The devices used in the study represented three of the most common types of e-cigarettes - bottom and top coil clearomizers, and a cartomizer.

The study avoided any variation in puff topography (e.g., puff volume, puff velocity, interval between puffs) by utilizing a controlled sampling system that simulated the most common vaping conditions. E-cigarette vapor was produced from each device by a four-second, 40-ml controlled puff, with 30-second resting periods between puffs. The e-cigarette devices were manually operated to replicate real-life conditions and all samples were collected in triplicate to verify and confirm results. Specific care was taken to avoid "dry puff" conditions.

To prove that the flavoring compounds, not the carrier e-liquid solvents (most commonly propylene glycol and/or vegetable glycerin)

dominated production of aldehydes during vaping, the authors performed a series of experiments in which a test flavored e-liquid was diluted with different amounts of the unflavored e-liquid. Liquids with higher flavor content produced larger amounts of aldehydes due to pyrolysis of the flavoring compounds.

In all experiments, the amount of aldehydes produced by the flavored e-cigarette liquids exceeded the American Conference of Governmental Industrial Hygienists Threshold Limit Values (TLVs) for hazardous chemical exposure.

- [E-cigarette Vapors And Flavorings Trigger Lung Cell Stress](#)
- [Toxins In E-Cigarette Vapor Increase With Heat And Frequency Of Use](#)
- [E-Cigarette Flavorings Alter Lung Function At Cellular Level](#)
- [Put That In Your E-Cigarette And Vape It: Or Should You?](#)