

# COMMON ADDITIVES TO CANNABIS OIL (AND OTHER VAPING LIQUIDS), PURPOSE, AND HARMFUL EFFECTS

Additive	Purpose	Effect
<b>Vegetable glycerin (VG)</b>	<ul style="list-style-type: none"> <li>◦ Found in most vaping products</li> <li>◦ Helps create the smoke-like aerosol<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>◦ Harmful effects on lungs and increases inflammation from influenza<sup>2</sup></li> </ul>
<b>Polypropylene glycol (PG) and Polyethylene glycol (PEG)</b>	<ul style="list-style-type: none"> <li>◦ Found in most vaping products</li> <li>◦ PG – binding agent that promotes an even inhale<sup>3</sup></li> <li>◦ PEG – diluent that maintains an even mix and helps form an aerosol cloud<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>◦ Decomposes to harmful compounds at high temperatures<sup>4,5</sup></li> <li>◦ Exposure to aerosol containing VG and PG causes lung damage in mouse model<sup>2</sup></li> <li>◦ Inhaling PG causes lung inflammation in rats<sup>5</sup></li> <li>◦ PG worsens allergy and asthma<sup>6</sup></li> </ul>
<b>Vitamin E acetate</b>	<ul style="list-style-type: none"> <li>◦ Used to dilute cannabis oil. Less common due to associated lung issues.</li> </ul>	<ul style="list-style-type: none"> <li>◦ Linked to the serious, potentially fatal lung disease, EVALI<sup>7</sup></li> </ul>
<b>Terpines</b>	<ul style="list-style-type: none"> <li>• Sometimes added to cannabis extract to add back the cannabis flavor and odor.</li> </ul>	<ul style="list-style-type: none"> <li>◦ Unknown</li> </ul>
<b>Flavors</b>	<ul style="list-style-type: none"> <li>◦ A variety of other flavorings are often added to the e-liquid to make them more appealing<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>◦ Potentially very harmful. <i>[Example: Diacetyl is a buttery popcorn-like flavoring that causes bronchiolitis called popcorn lung<sup>1</sup>.]</i></li> </ul>

**Sources:**

1. Penny, B. (2015, July 16). What “Oils” Can and Can’t Be Put in a Vape Pen? *Thought for Your Penny*. <http://thoughtforyourpenny.com/lifestyle/cannabis/what-oils-can-and-cant-be-used-in-vape-pens/>
2. Madison, M. C., Landers, C. T., Gu, B.-H., Chang, C.-Y., Tung, H.-Y., You, R., Hong, M. J., Baghaei, N., Song, L.-Z., Porter, P., Putturi, N., Salas, R., Gilbert, B. E., Levental, I., Campen, M. J., Corry, D. B., & Kheradmand, F. (2019). Electronic cigarettes disrupt lung lipid homeostasis and innate immunity independent of nicotine. *The Journal of Clinical Investigation*, 129(10), 4290–4304. <https://doi.org/10.1172/JCI128531>
3. WM. (2017, December 20). *Marijuana Vape Pens: What They Are & How To Consume* [Indirect Product Marketing]. Weedmaps. <https://weedmaps.com/learn/products-and-how-to-consume/vape/>
4. Kosmider, L., Sobczak, A., Fik, M., Knysak, J., Zaciera, M., Kurek, J., & Goniewicz, M. L. (2014). Carbonyl compounds in electronic cigarette vapors: Effects of nicotine solvent and battery output voltage. *Nicotine & Tobacco Research: Official Journal of the Society for Research on Nicotine and Tobacco*, 16(10), 1319–1326. <https://doi.org/10.1093/ntr/ntu078>
5. Song, M.-A., Reisinger, S. A., Freudenheim, J. L., Brasky, T. M., Mathé, E. A., McElroy, J. P., Nickerson, Q. A., Weng, D. Y., Wewers, M. D., & Shields, P. G. (2019). Effects of Electronic Cigarette Constituents on the Human Lung: A Pilot Clinical Trial. *Cancer Prevention Research*, canprevres.0400.2019. <https://doi.org/10.1158/1940-6207.CAPR-19-0400>
6. Choi, H., Schmidbauer, N., Spengler, J., & Bornehag, C.-G. (2010). Sources of Propylene Glycol and Glycol Ethers in Air at Home. *International Journal of Environmental Research and Public Health*, 7(12), 4213–4237. <https://doi.org/10.3390/ijerph7124213>
7. CDC. (2020, February 18). *Outbreak of Lung Injury Associated with E-Cigarette Use, or Vaping*. Centers for Disease Control and Prevention. [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html)