

# VAPING

Vaping is the act of inhaling and exhaling aerosols that could contain nicotine, THC (the active ingredient in marijuana), or other substances through an electronic cigarette, vape pen or personal vaporizer. These devices and products are appealing to youth as they come in a wide array of fruit and candy flavors. Since there is little odor, vaping is easy to conceal and enables people to use in public places including schools, with impunity.



## Harms of Vaping THC

- Vaping is not harmless as there is a potential risk from toxic exposure to carcinogenic compounds generated by these products.<sup>1</sup>
- Reports link cartridges containing THC to over 70% of reported vape-related lung illnesses.<sup>2</sup>



The Centers for Disease Control and Prevention (CDC) and the U.S. Food and Drug Administration (FDA) have warned the public to stay away from e-cigarettes and vapes containing THC. These products were confirmed to be the source of the outbreak of a dangerous lung illness that can cause coughing, shortness of breath, chest tightness, wheezing, and can eventually lead to lipoid pneumonia, collapsed lung, and death.<sup>3,4</sup>

## Vaping and Youth

- Approximately 2.06 million youths were estimated to be current e-cigarette users in 2021.<sup>5</sup>
- The most commonly used device in 2019 and 2020 was a prefilled pod or cartridge, disposable e-cigarette. Use increased from 3% to 15.2% among middle school youths and from 2.4% to 26.5% among high school youth.<sup>6</sup>
- Youth who use e-cigarettes are 3.5 times more likely to use marijuana than those who do not use e-cigarettes.<sup>7</sup> Additionally, nearly 1 out of 3 high school and 1 out of 4 middle school students who use e-cigarettes have used marijuana in the device.<sup>8</sup>
- The percentage of college students who said they vaped marijuana in the past 30 days rose from 5.2% in 2017 to 14% in 2019. Usage among their non-college-attending peers increased from 7.8% in 2017 to 17% in 2019.<sup>9</sup>
- Exposure to high levels of nicotine as well as THC during adolescence can have detrimental effects on the developing brain, impacting learning, memory, attention, and mental health.<sup>10</sup>



## Increases in Vaping Marijuana and CBD

- Increases in the prevalence of vaping marijuana may be attributed to the proliferation of marijuana and vaping products,<sup>11</sup> legalization of marijuana, and the decrease in perception of harm from marijuana use.<sup>12</sup>
- Studies indicate that there is a strong upward track for the prevalence of vaping high-potency marijuana concentrates, indicating an urgent need for mitigation of the harms through regulation and preventive measures.<sup>13</sup>
- Studies show an increase in vaping CBD. Vaping CBD (the second most active ingredient in marijuana) is unregulated by the U.S Food and Drug Administration allowing for the use of risky solvents, yielding potentially dangerous and carcinogenic byproducts when the solvents are heated. Vape devices were found to leak dangerous compounds into the CBD oil when heated.<sup>14</sup>
- Additionally, research suggests that CBD is partly transformed to THC during e-cigarette use. These results indicate that CBD in e-cigarettes can be considered as a precursor of THC. When consumed in e-cigarettes, CBD bears all the dangers related to this psychoactive compound.<sup>15</sup>

<sup>1</sup>Rubinstein ML, Delucchi K, Benowitz NL, Ramo DE. Adolescent Exposure to Toxic Volatile Organic Chemicals From E-Cigarettes. *Pediatrics*. 2018 Apr;141(4):e20173557. doi: 10.1542/peds.2017-3557. Epub 2018 Mar 5. PMID: 29507165; PMCID: PMC5869331. <sup>2</sup>CDC. (2020, February 25). Outbreak of Lung Injury Associated with the Use of E-Cigarette, or Vaping, Products. Retrieved from [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) <sup>3</sup>CDC. (2020, February 25). Outbreak of Lung Injury Associated with the Use of E-Cigarette, or Vaping, Products. Retrieved from [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) <sup>4</sup>FDA. (2019, October 4). Vaping Illness Update: FDA Warns Public to Stop Using Tetrahydrocannabinol (THC)-Containing Vaping Products and Any Vaping Products Obtained Off the Street. Retrieved from <https://www.fda.gov/consumers/consumer-updates/vaping-illness-update-fda-warns-public-stop-using-tetrahydrocannabinol-thc-containing-vaping> <sup>5</sup>CDC. E-cigarette use among youth and young adults. A report of the surgeon general. Atlanta, GA: US Department of Health and Human Services, CDC, Office on Smoking and Health; 2016. [https://e-cigarettes.surgeongeneral.gov/documents/2016\\_SGR\\_Full\\_Report\\_non-508.pdf#icon](https://e-cigarettes.surgeongeneral.gov/documents/2016_SGR_Full_Report_non-508.pdf#icon) <sup>6</sup>Wang TW, Gentzke AS, Neff LJ, et al. Disposable e-cigarette use among U.S. youth—an emerging public health challenge. *N Engl J Med* 2021;384:1573–6. <https://doi.org/10.1056/NEJMc2033943> <sup>7</sup>Chadi N, Schroeder R, Jensen JW, Levy S. Association Between Electronic Cigarette Use and Marijuana Use Among Adolescents and Young Adults: A Systematic Review and Meta-analysis. *JAMA Pediatr*. 2019;173(10):e192574. doi:10.1001/jamapediatrics.2019.2574 <sup>8</sup>Trivers KF, Phillips E, Gentzke AS, Tynan MA, Neff LJ. Prevalence of Cannabis Use in Electronic Cigarettes Among US Youth. *JAMA Pediatr*. 2018;172(11):1097–1099. doi:10.1001/jamapediatrics.2018.1920 <sup>9</sup>NIDA. (2020, September 15). Vaping, marijuana use in 2019 rose in college-age adults. Retrieved from <https://www.nih.gov/news-events/news-releases/vaping-marijuana-use-2019-rose-college-age-adults> <sup>10</sup>CDC. (2018, December 1). Surgeon General's Advisory on E-cigarette Use Among Youth. Retrieved from [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/surgeon-general-advisory/index.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/surgeon-general-advisory/index.html) <sup>11</sup>Bentivegna K, Atuegwu NC, Oncken C, DiFranza JR, Mortensen EM. Electronic cigarettes associated with incident and polysubstance use among youth. *J Adolesc Health*. 2021;68(1):123–129. doi:10.1016/j.jadohealth.2020.05.026 <sup>12</sup>Miech R, Johnston L, O'Malley PM. Prevalence and attitudes regarding marijuana use among adolescents over the past decade. *Pediatrics*. 2017;140(6):e20170982. doi:10.1542/peds.2017-0982 <sup>13</sup>Lim CCW, Sun T, Leung J, et al. Prevalence of Adolescent Cannabis Vaping: A Systematic Review and Meta-analysis of US and Canadian Studies. *JAMA Pediatr*. Published online October 25, 2021. <sup>14</sup>Gill, L. L. (2020, January). Is It Safe to Vape CBD? Consumer Reports. Retrieved from <https://www.consumerreports.org/cbd/is-it-safe-to-vape-cbd/> <sup>15</sup>Source: Czégény, Z., Nagy, G., Babinszki, B. et al. CBD, a precursor of THC in e-cigarettes. *Sci Rep* 11, 8951 (2021). <https://doi.org/10.1038/s41598-021-88389-z>