

### DON'T FOREGT THE FACTS

Don't cause your video to be disqualified by using untrue facts. Make sure your key message is from facts/evidence pulled from the <u>Break the Vape website</u>, this facts sheet, or any of the additional resources below:

- Health Canada Consider the Consequences
- Breath: The Canadian Lung Association
- <u>Canadian Mental Health Association: Vaping, What You and Your Friends Need to Know</u>
- <u>Quash website</u>
- <u>Not An Experiment website</u>

#### VAPING HARMS YOUR HEART AND LUNGS



- Vaping can cause harms to the heart and lungs, by damaging blood vessels and causing breathing problems like asthma.
- Inhaling particles and heavy metals can cause cancer. More than 60 chemicals have been found in vape liquid. Once heated and inhaled this number increases.
- The chemicals used to make flavours in e-juice/pods can damage heart and blood vessels.
- Propylene glycol creates the white cloud when vape aerosol is exhaled. This chemical is considered safe to ingest in small amounts, but when inhaled it has unknown long-term health effects.
- Vaping can also affect those around you, including small children who are attracted to the sleek devices and fruity or candy-like flavours.
- Just like second-hand smoke, second-hand vaping aerosol is also dangerous for those around you. It can contain toxic chemicals, nicotine, and cancer-causing agents from the user's exhaled vape aerosol.



If you have any questions check the <u>Break</u> <u>the Vape FAQs</u> or email us at <u>breakthevape@wechu.org</u>

#### EVIDENCE RELATED TO HARMS TO HEART AND LUNGS

- Puffing on a vape (breathing in vape aerosol) irritates the user's airways and can damage blood vessels (this means it impacts the blood flow throughout your body.) [1, 2]
- Puffing on a vape coats the user's lungs with harmful chemicals like ultrafine particles, cancer-causing heavy metals like copper, lead, and nickel, [3] and other cancer-causing chemicals. [4]
- Exposure to vape aerosol may be a trigger for both kids and adults with breathing problems, such as asthma, increasing their risk of severe asthma attacks. [5]
- Nicotine is a toxic chemical. Vaping nicotine raises your blood pressure and spikes your adrenaline, which increases your heart rate and increases the risk of stroke, heart attack, and diseased arteries. [6] Adrenaline is produced by the body when a person is frightened, angry, or excited, which makes the heartbeat faster and prepares the body to react to danger.
- The number of chemical ingredients used in e-juice/pods varies. Health Canada research has detected an average of 22 chemicals and roughly 9 flavouring chemicals in Canadian vaping products. Additional chemicals can also form when vapour products are heated or are in contact with parts of the vaping device (e.g., coil). [**7**]
- More than 60 chemicals have been found in vape liquids and this number grows when the liquid is heated to create an aerosol. In addition to nicotine, vaping liquids typically contain glycerol (vegetable glycerin) and propylene glycol (PG), and chemicals used for flavouring. While these ingredients are considered safe for use in cosmetics and foods, the long-term risks of inhaling these substances are unknown and continue to be researched. [8]
- Flavoring chemicals that create sweet, fruity, and candy flavors in vapes can damage your heart and blood vessels, increase your risk of heart disease, and damage lung tissue. [viii]
- Propylene glycol (PG) is a main component of vape liquid because it produces vapour when heated. PG is approved for use in many of the foods we eat like cake mix and ice cream, but it's NOT approved for inhaling.
- Heating PG in a vape device creates toxic, cancer-causing chemicals, that when inhaled can damage your airways and cause other harmful effects to your lungs. [9]
- Between 2011- 2019, a total of 68 cases of injury or poisoning were associated with ecigarette substances and vaping in Canada. Dangers included poisoning through ingestion, inhalation, and burns. **[10**]
- Second hand vape exposure: If you are hanging with someone who vapes, you are being exposed to toxic chemicals, nicotine, and cancer-causing agents from the user's exhaled vape aerosol. [11]





#### VAPING HARMS YOUR MENTAL HEALTH



- Vaping affects the youth developing brain which puts them at risk for addiction to other substances.
- Some teens think vaping helps to get rid of stress, anxiety, and depression, but it doesn't.
- Vaping nicotine can make feelings of stress and anxiety worse.
- Withdrawal from nicotine can be hard for anyone as it affects your mood, concentration, sleep, and overall feelings of wellbeing.
- Youth can become more easily addicted to nicotine at much lower concentrations than adults.

#### EVIDENCE RELATED TO HARMS TO MENTAL HEALTH

- Vaping is not a way to cope with stress, anxiety, or depression. In fact, it can make symptoms worse. [12, 13]
- Vaping affects your mood. When the effects of the nicotine wear off (in just a few short hours), teens can feel irritated, jumpy, and have a hard time concentrating, and sleeping.
   [14, 15]
- Vaping nicotine is strongly associated with worsening anxiety and depression. [16]
- Youth are more susceptible to addiction at much lower concentrations of nicotine than adults. [17]
- Addiction to nicotine during adolescence increases a young person's risk of addiction to other drugs, like cannabis. [**18, 19**]
- If you vape, quitting has been shown to improve stress, anxiety, and symptoms of depression. [20]

#### VAPING HARMS TEENS BRAINS

(because it's still developing until age 25)

- Vaping delivers large amounts of nicotine to the brain, which is a problem for anyone, but especially young people because the brain is developing until the age of 25.
- Nicotine can impact learning, memory, and attention. It puts youth more at risk of addiction to other substances.
- Teens can become addicted to nicotine easily and experience withdrawal symptoms when they need to use it. Someone may be addicted if they feel the need to take a puff, and experience symptoms of irritability, restlessness, anxiety, trouble sleeping, difficulty concentrating, and fatigue when they do not use nicotine.





#### **EVIDENCE RELATED TO HARMS TEENS BRAINS**

- A lot of e-juice and disposable vapes contain massive doses of nicotine. [21] One disposable vape can contain 1-2 packs of cigarettes worth of nicotine.
- Puffing a vape sends a huge hit of nicotine right to your brain in 10 seconds. [22]
- Using nicotine impacts learning, memory, and attention, and it can change adolescent brain chemistry (again, because the teen brain is still developing). Vaping nicotine increases your risk of smoking and using other substances. [23]
- Teens who vape describe strong cravings and other signs that they are addicted to nicotine, like reaching for their vape without thinking about it or feeling like they really need to use it. [24]

#### VAPING HARMS OUR ENVIRONMENT



- Not only is vaping dangerous for you and those around you, but our environment is also at risk.
- Vaping creates garbage and hazardous waste. Hazardous waste includes batteries, the electronic parts inside the vaping devices, and nicotine residue. They can also leak toxic metals into the ground.

#### EVIDENCE RELATED TO HARMS TO OUR ENVIRONMENT

- Vape waste is especially bad for the environment because it's three forms of waste in one: plastic waste, hazardous waste, and e-waste. All are hazardous to the environment. [25]
- Used vape cartridges and nicotine-filled pods contain plastics, electronic circuitry, and nicotine residue, which are hazardous waste. These devices can leak heavy metals such as mercury, lead, and bromines, as well as battery acid, into the ground. [27]





#### YOUTH USE OF VAPOUR PRODUCTS



- Great news! Although youth vaping rates are higher than youth tobacco use, not everyone is vaping. Unfortunately, those who do start using nicotine when they are young, have a harder time quitting.
- Youth often identify peer pressure and curiosity as the main reasons for trying an ecigarette and often, the first time they vaped was because someone they know shared it with them.
- Vaping also puts youth at risk of using other substances, including cannabis and puts them at risk of engaging in other risk-taking behaviours.
- Many youth who start vaping are unaware whether they are vaping nicotine or not.

### EVIDENCE RELATED TO YOUTH USE OF VAPOUR PRODUCTS

- Vapes are the most used nicotine product among youth, and the younger you are when you start using nicotine products, the harder it is to quit. [26]
- Youth initiation to vaping is often related to being curious, fitting in, or feeling cool. [27] First-time vaping was usually a result of an invitation to vape by someone well-known to them and a perception that vaping has a low risk of harm. [28]
- Vaping has been associated with an increased likelihood of future cannabis use and may be an indicator for other risk-taking behaviours. [29]

Here are some Canadian, Ontario, and Windsor-Essex youth vaping statistics.

- Canada- the Canadian Tobacco and Nicotine Survey in 2021,[30] found that:
- About 3 in 10 (29%) of youth aged 15 to 19 years reported having ever tried vaping at some point in their life.
  - 5% of Canadians aged 15 and older had reported vaping in the past 30 days. Younger Canadians were more likely to have vaped in the past 30 days (13% of youth aged 15 19 and 17% of those aged 20 24) compared to 4% of Canadians aged 25 and older.
- Ontario- the Ontario Student Drug Use and Health Survey in 2021 [**31**] found that:
  - 15% of grade 9 to 12 students reported using e-cigarettes (vapes) during the past year.
  - 84% of students using vapes report using vapes that contain nicotine and 17% of students report vaping cannabis.
- Windsor-Essex, the COMPAS Survey in 2022 [32] found that:
  - $\circ~$  15% of students in grades 7 to 12 used an e-cigarette in the past 30 days.
  - Among these students 46% used a vape to relax and or relieve stress/anxiety and 55% of students have used an e-cigarette because they were curious/to try something new.





#### THE COMMERCIAL TOBACCO<sup>\*</sup> INDUSTRY & E-CIGARETTE COMPANIES



- Commercial tobacco industries have a history of targeting youth through candy and fruitflavoured tobacco products and is now using the same tactics to encourage youth to vape.
- Youth are being targeted by marketing in non-traditional ways using social media platforms, social media influencers, and cool looking devices.
- When vaping marketing is widespread and rampant, vaping among youth increases.
- Companies are also promoting vaping as safer than traditional tobacco, but this has yet to be proven.
- These tactics are renormalizing using nicotine vaping devices in places where tobacco products are banned (ex. schools, parks, cars, and anywhere indoors).
- Companies are also trying to appeal to youth by keeping prices low and affordable to teens.

#### EVIDENCE RELATED TO THE COMMERCIAL TOBACCO<sup>\*</sup> INDUSTRY & E-CIGARETTE COMPANIES

- The commercial tobacco industry has historically targeted kids with candy and fruitflavored tobacco products and continues to do so with vapour products –promoting candy, fruit flavors, colorful packaging, and devices that often mirror the hottest tech gadget. [**33**]
- Vapour product companies use different strategies to recruit youth into vaping, including marketing in various social media platforms (ex. social media influencers), sleek device designs, renormalizing vaping in previously tobacco banned areas (indoors, parks, etc.), and emphasizing their products are safer than traditional tobacco products which has not actually been proven. Promotion of vapour products through various channels has lent to increased positive perceptions of vaping and intentions to use vaping products and contributes to increased youth uptake in vaping. [34]
- Vaping marketing is strongly associated with increased vaping at the individual level, but provinces with stronger marketing regulations and restrictions have lower overall vaping prevalence. [**36**]
- Tobacco/Vapour product companies are using discounted prices to market vape products to youth. [**35**]

\*The term "commercial tobacco" refers to products manufactured by companies for recreational and habitual use in cigarettes, ecigarettes/vapes, smokeless tobacco, pipe tobacco, cigars, hookahs, and other products. Commercial tobacco is mass-produced and sold for profit. Commercial tobacco does not include or refer to sacred tobacco that are used by many Native American tribes in spiritual and cultural ceremony and prayer.





#### REFERENCES

- I. Mohammadi, L., Han, D. D., Xu, F., Huang, A., Derakhshandeh, R., Rao, P., Whitlatch, A., Cheng, J., Keith, R. J., Hamburg, N. M., Ganz, P., Hellman, J., Schick, S. F., & Springer, M. L. (2022). Chronic ecigarette use impairs endothelial function on the physiological and cellular levels. Arteriosclerosis, Thrombosis, and Vascular Biology, 42(11), 1333–1350. <u>https://doi.org/10.1161/atvbaha.121.317749</u>
- 2. Nabavizadeh, P., Liu, J., Rao, P., Ibrahim, S., Han, D. D., Derakhshandeh, R., Qiu, H., Wang, X., Glantz, S. A., Schick, S. F., & Springer, M. L. (2022). Impairment of Endothelial Function by Cigarette Smoke Is Not Caused by a Specific Smoke Constituent, but by Vagal Input From the Airway. Arteriosclerosis, thrombosis, and vascular biology 42(11), 1324–1332. <u>https://doi.org/10.1161/ATVBAHA.122.318051</u>
- 3. Rastian, B., Wilbur, C., & Curtis, D. B. (2022). Transfer of metals to the aerosol generated by an
  electronic cigarette: Influence of number of puffs and power. International Journal of Environmental
  Research and Public Health, 19(15), 9334. <u>https://doi.org/10.3390/ijerph19159334</u>
- 4. Olmedo, P., Goessler, W., Tanda, S., Grau-Perez, M., Jarmul, S., Aherrera, A., Chen, R., Hilpert, M., Cohen, J. E., Navas-Acien, A., & Rule, A. M. (2018). Metal Concentrations in e-Cigarette Liquid and Aerosol Samples: The Contribution of Metallic Coils. Environmental health perspectives, 126(2), 027010. <u>https://doi.org/10.1289/EHP2175</u>
- 5. Schweitzer, R. J., Wills, T. A., Tam, E., Pagano, I., & Choi, K. (2017). E-cigarette use and asthma in a multiethnic sample of adolescents. Preventive Medicine, 105, 226–231. <u>https://doi.org/10.1016/j.ypmed.2017.09.023</u>
- 6. American Heart Association Scientific Sessions November 2022. Abstract SU3138 Acute Effects of Nicotine-containing Product Challenges on Cardiovascular and Autonomic Function Among Electronic Cigarette Vapers, Combustible Cigarette Smokers, and Controls: The Clues Study. Retrieved from <u>https://newsroom.heart.org/news/people-who-vape-had-worrisome-changes-incardiovascular-function-even-as-young-adults</u>
- **7.** Government of Canada. Risks of Vaping. Retrieved from <u>https://www.canada.ca/en/health-canada/services/smoking-tobacco/vaping/risks.html</u>
- 8. Lee, W. H., Ong, S. G., Zhou, Y., Tian, L., Bae, H. R., Baker, N., Whitlatch, A., Mohammadi, L., Guo, H., Nadeau, K. C., Springer, M. L., Schick, S. F., Bhatnagar, A., & Wu, J. C. (2019). Modeling Cardiovascular Risks of E-Cigarettes With Human-Induced Pluripotent Stem Cell-Derived Endothelial Cells. Journal of the American College of Cardiology, 73(21), 2722–2737. <u>https://doi.org/10.1016/j.jacc.2019.03.476</u>
- 9. Wang, P., Chen, W., Liao, J., Matsuo, T., Ito, K., Fowles, J., Shusterman, D., Mendell, M., & Kumagai, K. (2017). A Device-Independent Evaluation of Carbonyl Emissions from Heated Electronic Cigarette Solvents. PloS one, 12(1) <u>https://doi.org/10.1371/journal.pone.0169811</u>
- 10. McFaull, S. R., Do, M. T., Champagne, A., Bang, F. (2020). Injuries and poisonings associated with ecigarettes and vaping substances, electronic Canadian Hospitals Injury Reporting and Prevention Program, 2011–2019. Health Promotion and Chronic Disease Prevention in Canada Research, Policy, and Practice 40 (7/8) <u>https://doi.org/10.24095/hpcdp.40.7/8.05</u>





- 11. Almeida-da-Silva, C. L. C., Matshik Dakafay, H., O'Brien, K., Montierth, D., Xiao, N., & Ojcius, D. M. (2021). Effects of electronic cigarette aerosol exposure on oral and systemic health. Biomedical journal, 44(3), 252-259. <u>https://doi.org/10.1016/j.bj.2020.07.003</u>
- **12.** Kutlu MG, Gould TJ. (2015). Nicotine modulation of fear memories and anxiety: Implications for learning and anxiety disorders. Biochemical Pharmacol. doi: <u>10.1016/j.bcp.2015.07.029</u>
- **13.** Lechner WV, Janssen T, Kahler CW, et al. (2017). Bi-directional associations of electronic and combustible cigarette use onset patterns with depressive symptoms in adolescents. Preventive Medicine 96:73-78. doi: <u>10.1016/j.ypmed.2016.12.034</u>
- 14. Chadi, N., Vyver, E., & Bélanger, R. E. (2021). Protecting children and adolescents against the risks of vaping. Pediatrics & child health, 26(6), 358–374. <u>https://doi.org/10.1093/pch/pxab037</u>
- **15.** Canadian Mental Health Association (2020, June). Vaping-Youth-Resource [PDF]. Retrieved from <u>https://www.camh.ca/-/media/files/vaping-youth-resource-en-pdf.pdf</u>
- 16. Leslie F. M. (2020). Unique, long-term effects of nicotine on adolescent brain. Pharmacology, biochemistry, and behavior, 197, 173010. <u>https://doi.org/10.1016/j.pbb.2020.173010</u>
- 17. National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health. (2016). E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General. Retrieved from <u>https://www.cdc.gov/tobacco/sgr/e-</u> <u>cigarettes/pdfs/2016\_sgr\_entire\_report\_508.pdf</u>
- 18. Mehra, V.M., Keethakumar, A., Bohr, Y.M. et al. (2019). The association between alcohol, marijuana, illegal drug use and current use of E-cigarette among youth and young adults in Canada: results from Canadian Tobacco, Alcohol and Drugs Survey 2017. BMC Public Health 19, 1208. <u>https://doi.org/10.1186/s12889-019-7546-y</u>
- **19.** Ren M, Lotfipour S. (2019). Nicotine Gateway Effects on Adolescent Substance Use. West J Emerg Med. 20(5):696-709. doi: 10.5811/westjem.7.41661.
- 20. Health Canada. (2023). Consider the Consequences of Vaping. Retrieved from:
- 21. The Society for Adolescent Health and Medicine. (2019). Protecting Youth from the Risks of Electronic Cigarettes. Journal of Adolescent Health 66(1):127-131.
- **22.** Government of Canada (2013). Nicotine addiction. Retrieved, from <u>https://www.canada.ca/en/health-canada/services/smoking-tobacco/health-effects-smoking-second-hand-smoke/nicotine-addiction.html</u>
- 23. Tobore T. O. (2019). On the potential harmful effects of E-Cigarettes (EC) on the developing brain: The relationship between vaping-induced oxidative stress and adolescent/young adults social maladjustment. Journal of adolescence. 76, 202–209. https://doi.org/10.1016/j.adolescence.2019.09.004
- 24. Simpson, K. A., Kechter, A., Schiff, S. J., Braymiller, J. L., Yamaguchi, N., Ceasar, R. C., Bluthenthal, R. N., & Barrington-Trimis, J. L. (2021). Characterizing symptoms of e-cigarette dependence: a qualitative study of young adults. BMC public health. 21(1), 959. https://doi.org/10.1186/s12889-021-10945-z





- **25.** Hendlin Y. H. (2018). Alert: Public Health Implications of Electronic Cigarette Waste. American Journal of Public Health, 108(11), 1489-1490. <u>https://doi.org/10.2105/AJPH.2018.304699</u>
- 26. Siqueira, L. M., & Committee on Substance Use and Prevention (2017). Nicotine and Tobacco as Substances of Abuse in Children and Adolescents. Pediatrics, 139(1), e20163436. <u>https://doi.org/10.1542/peds.2016-3436</u>
- 27. Health Canada (2020). Exploratory Research on Youth Vaping. <u>https://publications.gc.ca/site/archivee-archived.html?</u> <u>url=https://publications.gc.ca/collections/collection\_2020/sc-hc/H14-347-2020-eng.pdf</u>
- **28.** Jayakumar, N., O'Connor, S., Diemert, L., & Schwartz, R. (2020). Predictors of E-Cigarette Initiation: Findings from the Youth and Young Adult Panel Study. Tobacco use insights, 13, 1179173X20977486. <u>https://doi.org/10.1177/1179173X20977486</u>
- **29.** Sun R., Mendez D., Warner K. E. (2022) Use of Electronic Cigarettes Among Cannabis-Naive Adolescents and Its Association with Future Cannabis Use. JAMA Network Open. 5(7): e2223277. doi:10.1001/jamanetworkopen.2022.23277
- **30.** Health Canada, 2023. Vaping in Canada-What we know. Retrieved from <u>https://www.canada.ca/en/health-canada/services/smoking-tobacco/surveys-statistics-</u> <u>research/vaping-what-we-know.html</u>
- 31. Center for Addiction and Mental Health, 2022. The Ontario Student Drug Use and Health Survey. Retrieved from: <u>https://www.camh.ca/en/science-and-research/institutes-and-</u> <u>centres/institute-for-mental-health-policy-research/ontario-student-drug-use-and-health-survey-</u> <u>--osduhs</u>
- **32.** University of Waterloo. 2022-2023 COMPASS. Windsor-Essex County Health Unit Schools Data.
- **33.** Brown, J. E., Luo, W., Isabelle, L. M., & Pankow, J. F. (2014). Candy flavorings in tobacco. The New England Journal of Medicine, 370(23), 2250–2252. Doi: <u>https://doi.org/10.1056/NEJMc1403015</u>
- 34. Struik, L. L., Dow-Fleisner, S., Belliveau, M., Thompson, D., & Janke, R. (2020). Tactics for Drawing Youth to Vaping: Content Analysis of Electronic Cigarette Advertisements. Journal of medical Internet research, 22(8), e18943. Doi: <u>https://doi.org/10.2196/18943</u>
- 35. How cheap will vaping products get before we see price as part of the youth vaping problem? – physicians for a smoke-freeCanada. (2019, November 17). Retrieved from <u>https://smoke-free.ca/how-cheap-will-vaping-products-get-before-we-see-price-as-part-of-the-youth-vaping-problem/</u>



