



*The HEALYAC is a Youth Advisory Council (YAC) in London, Ontario, Canada that informs youth-related health research conducted by the Human Environments Analysis Laboratory (HEAL). The HEALYAC represents the diverse voices and perspectives of 14 teenagers from across the city.*

## POSITION STATEMENT: VAPING IN SCHOOLS AND STUDENT HEALTH

We, the HEALYAC, are concerned about the rising prevalence of vaping in our schools. Easy access to these products leaves all high school students, both those who vape and their peers, vulnerable to the uncertain consequences of vaping. The lack of evidence and awareness involving the health effects of vaping and the impacts of exposure to vaping, is a key health issue facing teenagers in Canada. We are calling for additional research, and immediate implementation of government regulation, improved detection and enforcement in schools, and cessation and coping support for youth

### THE PROBLEM

#### Vaping Enforcement and Exposure

In recent years, vaping products have gained significant traction in Canada [1-2]. Vapes, or e-cigarettes, are becoming especially popular amongst teenagers, particularly in school settings [3-4]. As members of the HEALYAC, we are not only concerned about our daily involuntarily exposure to vaping, but also the distraction that e-cigarette use causes in educational environments. Despite potential consequences, many teens are using vaping products on school property at an alarming rate. This could be attributed to the fact that vaping is largely undetected and restrictions remain unenforced. The undetectable nature of vaping allows for high school students to vape not only on the property surrounding schools, but also in classrooms, gyms, and bathrooms [3,5]. This poses both a distraction and a barrier to learning. We feel that most vaping occurs in areas that are not monitored or have little to no security, including bathrooms. This frequent and involuntary exposure can lead to students feeling pressured by peers to experiment with vaping. Thus, we strongly encourage stricter enforcement in schools to mitigate this issue and reduce the prevalence of vaping in educational settings. Optimizing enforcement and restricting vaping within and around schools would improve adolescent health and foster safe spaces for learning.

#### Access to Products

The Tobacco and Vaping Products Act regulates the marketing, sale, and use of vaping devices and their associated products in Canada. Legally, only those of majority age (typically 19+) in their province or territory may purchase vaping devices and products. However, teenagers have reported significantly elevated use of nicotine and other products via vaping devices [6-7]. In Canada, users report purchasing their devices from traditional retail outlets, which highlights that the lack of regulatory enforcement enables teenagers to easily access vaping products in their community [8]. In addition, online sales of vaping products in Canada do not require age verification upon purchase, and only include a loosely enforced guideline for age verification on delivery [7]. It is clear the lack of enforcement, and desire to balance regulatory demands, has made it easier for us, and other teenagers, to access vaping devices, and associated nicotine-based products.

#### Vaping and Mental Health

In our schools, many students experience academic stress and anxiety, and we have noticed that some students are using vaping to cope with these feelings. We are deeply concerned about associated risks with vaping that can lead to nicotine addiction and physical dependence. Those who wish to quit may experience the hardships of withdrawal [9]. Exposure to nicotine can lead to reduced impulse control, and cognitive and behavioural problems [9]. Youth are especially susceptible to its negative effects, as it is known to alter their brain development and can affect memory and concentration [10]. Stress during adolescence is a risk factor for the initiation of nicotine consumption and studies have shown that vaping is a mediator in the decision to start smoking in previously nonsmoking adolescents [11, 12]. Stress during adolescence may further augment the rewarding properties of nicotine and alter behavioral responses to nicotine later in life. In addition, nicotine addiction can exacerbate symptoms of depression and anxiety [13]. Further, given the prevalence of vaping in our schools, we believe that it has not only become a classroom distraction, but has also a new avenue for peer pressure to consume controlled substances.

#### Lack of Evidence and Awareness Related to Health Impacts of Vaping

There is a lack of scientific evidence available for young people to make informed decisions about vaping. The liquid solution used in vapes contains several ingredients that are potentially harmful and addictive, including nicotine, propylene, and glycol. Vaping devices can also be used to consume marijuana or cannabis products [3]. While the long-term consequences of inhaling vaping products are unclear, recent studies provide preliminary evidence related to the health effects of nicotine and tobacco use. For example, studies show that daily e-cigarette use is associated with an elevated risk of heart attack [14], and with regard to youth and adolescents specifically, nicotine use has been found to negatively affect brain development [10,15,16] and lead to tobacco smoking initiation [17]. Furthermore, the risk that vaping fumes may pose to bystanders is unknown. Our concerns are that teens are either unaware of the potential health effects of vaping or that the uncertainty of the evidence around vaping is leading to an assumption that there are no negative consequences.

Given the serious consequences that vaping can have on youth's health and wellbeing, we believe immediate action is necessary. As representatives of youth in our community, we propose the following recommendations to address this complex public health issue.

## RECOMMENDATIONS

### Conduct Longitudinal Research

Although research is limited on the health impacts of vaping, we believe there is enough evidence to justify efforts to prevent the use of vaping products by youth. The long-term safety of inhaling some of the chemicals found in vaping liquid is unknown and should continue to be assessed. Identifying the health impacts of these chemicals and the differences between adolescents and adults in response to vaping, particularly on measures associated with nicotine addiction and mental health, is critical to creating effective prevention and reduction programs and policies.

### Promote Mental Health and Coping Strategies

Vaping is not intended for youth and non-smokers, nor is it an appropriate tool for stress management. Early addiction to nicotine can exacerbate symptoms of depression and alter brain development. Since stress is often cited as a reason to engage in vaping, effective stress management programs that are age appropriate should be created. Conversations with youth should include facts of mental health issues and consequences of nicotine addiction that may arise from vaping. We should have improved access to support and healthier alternatives to vaping to cope with stress and anxiety. Teachers, school administrators, parents, and students should be provided with information on effective vaping prevention and cessation strategies, as well as mental health resources for teens.

### Control Access to Products

In no case should those younger than 19 years be able to access vaping devices and associated products. We recommend that local, provincial, and federal regulations be modified to introduce strict marketing rules, and new safeguards on the online purchase of vaping products.

**Local:** Local governments should dedicate resources to the monitoring and inspection of retail outlets selling vaping devices and their products. In addition, the sale of vaping devices and their products should be banned at establishments frequented by youth.

**Provincial:** The health curriculum should be modified to discourage vaping and inform students about the negative health effects of using vaping-associated products. The province should work with the federal government to establish a secure electronic identity system to verify the age of online purchasers of vaping products.

**Federal:** Government agencies should invest in research to understand the health effects and uptake of vaping among young people, and work with local and provincial governments to ensure enforcement of existing regulations on vaping.

### Develop Youth-Oriented Educational Campaigns

Given the overall uncertainty and lack of awareness surrounding vaping, we emphasize that, in addition to policy and government action to restrict vaping, greater efforts should be made to educate students and the wider public about the potential health-related consequences. We feel that the current messaging from the government about the consequences of vaping need to be more youth oriented. We recommend that health education campaigns about vaping be developed with content and messaging relevant to and targeted at youth, and subsequently disseminated through channels and platforms accessed by youth.

### Improve Enforcement and Reduce Exposure

We would like to see vaping prohibited on school property. We recommend that education infrastructure is a key area for intervention, specifically in relation to detection, training and awareness, and security.

**Detection:** Infrastructure additions, such as vape detection sensors, could reduce the prevalence of vaping in schools and deter teens from vaping on school property.

**Training:** Training for teachers and school staff to recognize and detect the presence of vaping on school property could prove to be an effective means for enforcing vaping regulations in schools.

**Security:** Additional security and monitoring in educational settings may curb the use of vapes and e-cigarettes. Regular supervision of common 'places of usage', or areas that have high instances of vaping (i.e., gyms, hallways, classrooms, libraries) is needed.

## REFERENCES

- Reid, J. L., Rynard, V. L., Czoli, C. D., & Hammond, D. (2015). Who is using e-cigarettes in Canada? Nationally representative data on the prevalence of e-cigarette use among Canadians. *Preventive Medicine*, 81(1), 180-183. doi: 10.1016/j.ypmed.2015.08.019
- Heart & Stroke. (2018). E-cigarettes in Canada. Retrieved from <https://www.heartandstroke.ca/-/media/pdf-files/position-statements/ecigarettesincanada.aspx?2a=en&hash=8939FF52C37A5E11C551176982F2E4AC5D38D605>
- Morean, M. E., Kong, G., Camenga, D. R., Cavallo, D. A., & Krishnan-Sarin, S. (2015). High School Students' Use of Electronic Cigarettes to Vaporize Cannabis. *Pediatrics*, 136(4), 611-616. doi:10.1542/peds.2015-1727
- Patrick, M. E., Miech, R. A., Carlier, C., O'Malley, P. M., Johnston, L. D., Schulenberg, J. E. (2016). Self-reported reasons for vaping among 8th, 10th, and 12th graders in the US: Nationally-representative results. *Drug and Alcohol Dependence*, 165(1), 275-278. doi:10.1016/j.drugalcdep.2016.05.017
- Allem, J., Dharmapuri, L., Unger, J. B., & Cruz, T. B. (2018). Characterizing JUUL-related posts on Twitter. *Drug and Alcohol Dependence*, 190(1), 1-5. doi:10.1016/j.drugalcdep.2018.05.018
- Gostin, L. O., & Glasner, A. Y. (2014). E-cigarettes, vaping, and youth. *Journal of the American Medical Association*, 312(6), 595-596. doi: 10.1001/jama.2014.7883
- House of Commons Canada. (2019). Vaping: toward a regulatory framework for e-cigarettes. Report of the Standing Committee on Health. Retrieved from: <https://www.ourcommons.ca/DocumentViewer/en/41-2/HESA/report-9>
- Braak, D. C., Cummings, K. M., Nahhas, G. J., Heckman, B. W., Borland, R., Fong, G. T., ..., & Shang, C. (2019). Where do vapers buy their vaping supplies? Findings from the International Tobacco Control (ITC) 4 Country Smoking and Vaping Survey. *International journal of environmental research and public health*, 16(3), 338.
- Canada, Health. "Government of Canada." Risks of Vaping - Canada.ca. Government of Canada, 14 June 2019, [www.canada.ca/en/health-canada/services/smoking-tobacco/vaping/risks.html#3](http://www.canada.ca/en/health-canada/services/smoking-tobacco/vaping/risks.html#3).
- England, L. J., et al. (2015). Nicotine and the developing human: a neglected element in the electronic cigarette debate. *American journal of preventive medicine* 49(2), 286-293.
- Miech R, Patrick ME, O'Malley PM, et al E-cigarette use as a predictor of cigarette smoking: results from a 1-year follow-up of a national sample of 12th grade students *Tobacco Control* 2017;26:e106-e111.
- Ontario Agency for Health Protection and Promotion (Public Health Ontario), Berenbaum E, KellerOlaman S, Manson H, Moloughney B, Muir S, Simms C, Singh H, Watson K. Current evidence on e-cigarettes: a summary of potential impacts. Toronto, ON: Queen's Printer for Ontario; 2018.
- Dierker, L., Rose, J., Selya, A., Plasecki, T. M., Hedeker, D., & Mermelstein, R. (2015). Depression and nicotine dependence from adolescence to young adulthood. *Addictive behaviors*, 41, 124-128. doi:10.1016/j.addbeh.2014.10.004
- Czoli, C. D., Fong, G. T., Goniewicz, M. L., & Hammond, D. (2019). Biomarkers of Exposure Among "Dual Users" of Tobacco Cigarettes and Electronic Cigarettes in Canada. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*, 21(9), 1259-1266. doi:10.1093/ntr/nty174
- England, L. J., Bunnell, R. E., Pechacek, T. F., Tong, V. T., & McAfee, T. A. (2015). Nicotine and the Developing Human: A Neglected Element in the Electronic Cigarette Debate. *American journal of preventive medicine*, 49(2), 286-293. doi: 10.1016/j.amepre.2015.01.015
- Yuan, Menglu & Cross, Sarah & Loughlin, Sandra & Leslie, Frances. (2015). Nicotine and the adolescent brain. *The Journal of physiology*. 593. 10.1113/jp270492.
- Hammond, D., Reid, J. L., Cole, A. G., & Leatherdale, S. T. (2017). Electronic cigarette use and smoking initiation among youth: a longitudinal cohort study. *Canadian Medical Association Journal*, 189(43), E1328 LP-E1336. <https://doi.org/10.1503/cmaj.161002>