E-cigarette and Vaping
Backgrounder

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This document was developed to provide educators with background information on vaping to help them prepare to teach lessons related to vaping.

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What is Vaping?

Vaping is the act of inhaling and exhaling an aerosol produced by a vaping device, such as an electronic cigarette or a vape. With a vape, the battery-powered device heats a liquid (e-juice) solution to create an aerosol (vapour or cloud). The aerosol, which resembles smoke, is inhaled into the lungs. The e-juice inside the chamber usually contains a mix of propylene glycol, vegetable glycerin, chemicals to create flavour, and a varying amount of nicotine. These devices come in many different shapes and sizes and may have removable parts (Health Canada, 2019).

Vaping devices have many names, including:

- electronic cigarettes / e-cigarettes
- mods
- vapes
- vape pens
- tank systems
- electronic nicotine delivery systems (ENDS)
- sub-ohms

There are two types of vaping devices: open and closed. Open means the tank or reservoir can be refilled, while closed means the entire product or the part that holds the vaping substances cannot be refilled.

For more information about how vaping products work, watch The Mechanics of Vaping video (1:08 seconds).

Are These Products Legal?

Health Canada's Tobacco and Vaping Act (TVPA) was enacted in May 2018 to regulate aspects of tobacco and vaping products. This federal act:

- Prohibits the sale of vaping products to those under 18 years of age (this age varies based on provincial legislation).
- Prohibits the promotion of vaping products that are appealing to youth, such as cotton candy or chocolate cake.
- Limits the maximum nicotine concentration to 20mg/ml for vaping products marketed in Canada.

The Smoke-Free Ontario Act, 2017 (SFOA) has been updated to include vaping products. This provincial act:

- Prohibits the sale or supply of e-cigarettes to persons under the age of 19.
- Prohibits the promotion of vaping products unless displayed in a specialty vape store, which do not permit anyone under the age of 19 to enter.
- Limits the sale of flavoured vaping products to specialty vape stores where anyone under the age of 19 are prohibited to enter.
- Prohibits the use of an e-cigarette to vape any substance in all enclosed public spaces and enclosed workplaces, as well as additional prohibited places, such as children's playgrounds, on and within 20 meters from the perimeter of school grounds and recreational facility properties, sporting events, and on and within 9 meters of bar/restaurant patios.

- The SFOA is enforced locally by the Tobacco & Vaping Enforcement Officers (TVEOs) at the Windsor-Essex County Health Unit. Contact a WECHU TVEO for questions at 519-258-2146 ext. 3100 or submit a tobacco or vaping complaint online.

It is also important to be aware of local municipal by-laws that further restrict areas where vaping is permitted. To find more information regarding municipal by-laws, visit SFOA, 2017 and Smoke-Free Spaces web page.

Why Do Youth Vape?

Some of the most common reasons youth experiment with, or use vaping products include:

- peer pressure (direct or implied and is the most important predictor of initiation)
- curiosity
- boredom
- it has become a normalized behavior (e.g., seeing friends and family, as well as social media influencers using the products makes it seem acceptable and normal)
- addiction, they like the "hit" they get from nicotine
- appealing flavors (e.g. fruit, candy, dessert)
- devices are seen as trendy, or a status symbol
- they consider vaping "harmless" and "safer than smoking"
- in order to quit or cut down on smoking (less frequently)
- easy access to vapes from friends
- targeted by tobacco companies who also own e-cigarette companies by using flavours and marketing to entice youth.
- social media exposure

Youth Populations More at Risk for Vaping and What is the Prevalence Among Young People?

The Ontario Tobacco Control Area Network (TCAN) and Public Health Ontario Situational Assessment of Youth (18 years and younger) for smoking and vaping (September 2022) summarize key studies, which identify youth at higher risk for the initiation of vaping and include:

- Being male, Canadian born, having lower grades (older adolescents 15-17 years)
- Friends using e-cigarettes/ vape products
- Being employed and having more spending money
- Low perceived harm of using vaping devices
- Use of other substances (alcohol, cannabis, and cigarettes)
- Students who met the Canadian physical activity guidelines

- 12 to 14-year-olds with an attention hyperactivity disorder

The situational assessment also identified that parents or guardians who knew who their children were with was a protective factor in the prevention of the initiation of vaping.

How many students are using these products?

In Ontario, 15.3% of students in grades 7 to 12 report vaping at least once in the past year, while 11.5% reported vaping in the past month. Over one quarter (26.4%) of students have tried vaping in their lifetime, and among those who vaped, 84% report vaping nicotine, approximately 10% did not vape nicotine, and almost 6% did not know if their vape contained nicotine. Among the grades, students in the 11th and 12th grades are most likely to use (OSDUHS, 2021).

In Windsor-Essex, 15% of students have used an e-cigarette in the past 30 days. Females (17%) are more likely than males (12%) to vape in our region (COMPASS, 2022).

The Canadian Cancer Society released a statement in the summer of 2019 raising concern over the dramatic increase in youth vaping behaviors. The University of Waterloo found that vaping increased by 74% among 16 to 19 year olds in just one year. It is unclear if this trend will continue at this rapid rate, but it is a large concern for this age group.

It is important to note that while the rates of cigarette smoking had reached an all-time low, this is accompanied by rapidly rising rates of vaping and e-cigarette use (Health Canada, 2019). Students also reported that e-cigarettes and alcohol are the easiest substances to obtain (OSDUHS, 2021).

Why is Vaping a Concern for Youth?

Although youth perceive vaping to be less harmful than smoking, there are still consequences for youth to consider. Vaping can expose youth to chemicals that could harm their health and lead to lung damage. There are a wide range of chemicals in e-juice, and the effects of them combining with others, being heated, and inhaled, are unknown.

Nicotine

Vaping can also lead to nicotine dependency. Nicotine is a highly addictive substance, which may be in some e-juice, and acts quickly in the bloodstream. Just as quickly as its effects are felt, they disappear. Nicotine acts on the brain, causing a release of dopamine and a small rush of adrenaline, which speeds up the heart rate. These effects wear off in a few minutes, until the next hit of nicotine enters the body. The body adapts to nicotine, making the user need to increase the amount and frequency they use to get the same effects. Users can also develop a physical and emotional addiction to the act of vaping.

The younger someone starts vaping, the more likely they are to develop a nicotine addiction. The longer someone is exposed to the harmful chemicals and toxins in tobacco and vape products, the more likely they are to experience negative health effects. Although not approved as a cessation aid, vaping is intended to help smokers quit tobacco. Vaping is not for youth and non-smokers and is not without its own dangerous health impacts.

What effects does vaping have on health?

We do know that vaping products have a negative impact on health – much like smoking cigarettes. In fact, studies suggest that vaping could lead to similar diseases as smoking, though at a reduced rate. The toxic chemicals in the aerosols, some of which are carcinogenic, can lead to many serious health effects.

Short-term effects may include:

- coughing and wheezing
- inflammation of the lungs
- increased heart rate
- increased blood pressure

The long-term health effects of inhaling vaping aerosol are currently unknown as it is a relatively new behavior.

Although more studies are needed to determine long-term health effects, it is known that the aerosol inhaled and exhaled from a vaping device contains potentially harmful substances, including (CDC):

- Nicotine
- Ultrafine particles that can be inhaled deep into the lungs
- Chemical flavourings
- Volatile organic compounds
- Cancer causing chemicals (similar to those found in cigarettes)
- Heavy metals such as nickel, tin, and lead

Nicotine can alter brain development, especially in those under the age of 25, as the brain is still developing. This can effect a person's memory, ability to concentrate, their personality, emotion and impulse control, all of which can be long-term. The levels of nicotine in a vape pod can be equal to or greater than that of a full pack of cigarettes – an amount higher than an adolescent's body is able to process or tolerate. This high level of nicotine also increases the risk of addiction to other substances.

Nicotine withdrawal symptoms include irritability, restlessness, feeling anxious or depressed, trouble sleeping, problems concentrating, and craving nicotine, which contributes to continued use.

Lithium-ion batteries in vaping products can explode causing injury and fires. Proper use, storage, handling, and charging of the batteries may help reduce this risk.

Reports of child poisoning are on the rise due to accidental exposure and consumption of e-liquids.

What policies are currently in place in schools and how are schools addressing youth vaping?

Please refer to your specific school's policy on tobacco and substance use for further information. It is also important to familiarize yourself with your school board's policies and regulations regarding a smoke free/vape free environment.

Smoking or vaping inside a school, and on school property, is prohibited under the SFOA, 2017. This is a fineable offence for anyone of any age. To smoke or vape, a person must be at least 20 meters away from school grounds. If you have concerns about vaping at your school, contact your school's TVEO or submit a complaint online to the WECHU. The school environment is an important part of educating students regarding the risks of vaping and is now included in the Health and Physical Education Curriculum (2019).

Where can youth get help to quit?

To get more information on cessation supports, visit the Tobacco/Vaping Cessation Resources for Windsor-Essex County.

- Their health care provider
- Child and Youth Worker or Mental Health and Addictions Nurse
- An adult they trust
- Public Health Nurse
- Other supports: Kids Help Phone
- Quash App: A mobile app that offers support for youth to quit vaping and smoking.
- Crush The Crave - Vape Edition: a free app that can help youth quit vaping. It can be found on the App Store.

Where can I get more information?

If you are looking for more information on vaping, visit the **Vaping Resources for Educators** section on our website.

References:

- Health Canada – About Vaping
- Centres for Disease Control and Prevention
- Canadian Pediatric Society Position Statement – Protecting children and adolescents against the risks of vaping
- Ontario Student Drug Use and Health Survey (OSDUHS 2021)