

WHAT YOU NEED TO KNOW ABOUT VAPING: FACTS, RISKS, FAQS & MORE

HEALTH RISKS AND SIDE EFFECTS OF VAPING YOU SHOULD KNOW ABOUT

1. The e-liquid used in vaping products contains chemicals that evidence demonstrates has negative health effects.

Vaping products contain an e-liquid that is vapourized, and then inhaled by users. This e-liquid contains a variety of chemicals out of a possible 200 that have not been evaluated for health when inhaled. The long-term risks of inhaling these chemicals are still being studied. Research has begun and demonstrate negative effects on both the lung and heart.

2. The process of heating e-liquid produces additional chemicals also under investigation to determine potential risks to health.

Research is underway to understand how heating the liquid leads to creating new chemicals. Currently, we know it creates volatile carbonyls, a group of compounds including formaldehyde and acrolein, that can lead to severe health issues.

4. Levels of nicotine and other chemicals in vaping products vary significantly.

Content in vaping products varies widely and can utilize nicotine salts to be more potent. Levels can vary significantly, as opposed to nicotine-containing products (e.g. nicotine patches) that carry a smoking cessation claim that contain standardized/regulated nicotine levels. Research has shown that labels regularly underreports levels of nicotine and other compounds.

5. Young children, youth, and pregnant women are especially susceptible to nicotine's health risks.

We strongly advise these populations to avoid using vaping products.

6. Nicotine can alter fetal development in pregnant women and brain development in young people.

Youth and young adults can become addicted to nicotine much more easily. There is also evidence that youth who vape products with nicotine can become addicted to other tobacco products.

7. Some vaping products contain THC, AKA tetrahydrocannabinol, the psychoactive ingredient in cannabis.

THC is known to alter brain development in youth and young adults. It also creates toxic compounds when heated.

8. Vitamin E acetate is believed a likely contributor related vaping illness, like EVALI.

While safe for use topically or to ingest as a supplement, inhalation of vitamin E acetate can interfere with normal lung function. E-cigarettes also contain chemicals suspected or known to cause cancer.

9. Research indicates people who vape may be at a higher risk of heart disease, gum disease, lung disease, headaches, anxiety and risk of infection.

Using vaping products is shown to increase heart rate and potentially damage the lining of the arteries, causing blood vessels to stiffen. Research already exists linking nicotine use to heart disease in people who smoke. It is also linked to mouth damage and inflammation.

10. There are risks associated with breathing in second-hand vapour.

Vaping products produce particulate matter that can penetrate deep into the lungs and cause cardiovascular damage. It is important to be cautious using vaping products around non-users, especially youth or pregnant women who are most susceptible to related health risks.

11. Finally, most vaping products use lithium-ion batteries that can explode and cause fire and injury.

It is vital vaping product batteries be properly used, stored, carried, and charged. Serious injuries have occurred due to battery malfunctions. If you notice a safety problem related to a vaping product, report the problem to the manufacturer or Health Canada.

FAQS ABOUT VAPING

Here are some of the commonly asked questions about vaping and vaping products.

What are vaping products?

Vaping products are battery-powered devices that heat a liquid solution to create an aerosol (vapour or cloud).

Vaping products have many names such as e-cigarettes, vapes, vape pens, mods (box or pod), tanks, e-hookahs and are also known by various brand names. These devices do not contain tobacco and do not involve burning. Most contain nicotine. They consist of the following:

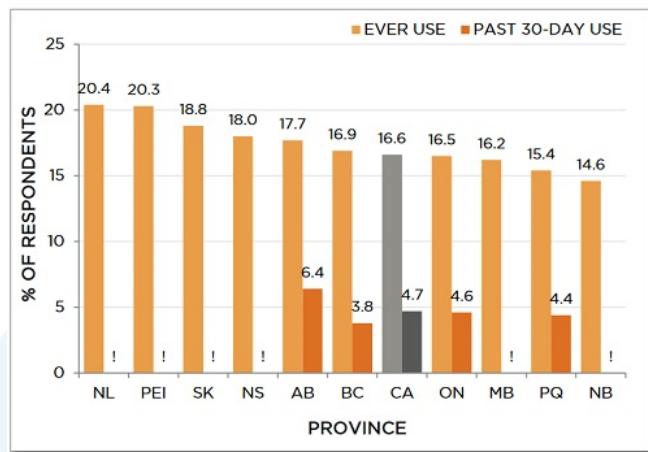
- Atomizer is also known as cartomizer or clearomizer
- E-juice is also known as e-liquid or vaping liquid

The latest stats by the Alberta Health Ministry show vaping rates doubled, from 19 percent in 2013 to 35 percent, roughly 1 in 3 Alberta youth between 15-19 years olds now vape.

Over 48% say they have tried a vape.

Alberta has the highest rate of regular use of vapes among youth in Canada for past 30-day use.

FIGURE 11.8: PREVALENCE OF EVER USE AND PAST 30-DAY USE OF E-CIGARETTES AMONG CANADIANS AGE 15+, BY PROVINCE, 2020



! ESTIMATES SUPPRESSED DUE TO UNACCEPTABLE QUALITY
DATA SOURCE: CANADIAN TOBACCO AND NICOTINE SURVEY (CTNS), 2020

What vaping devices are most commonly used?

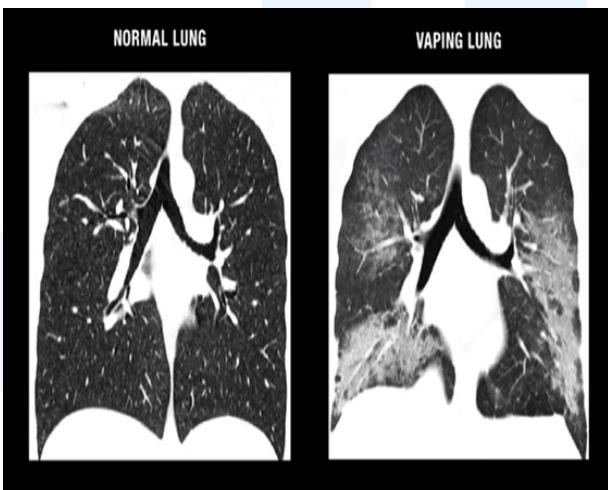
Original vaping devices were made to look like traditional cigarettes. However, newer generations of vaping products are more advanced and come in many shapes, sizes, and styles. 'JUUL' and 'Aspire Breeze' are examples of vaping products that are now popular. They contain high amounts of nicotine, which are readily absorbed, thus providing a greater nicotine 'hit'.



What is in the e-juices?

Most e-juice typically contain:

- propylene glycol (PG)
- vegetable glycerin (VG)
- flavourings
- Nicotine (none to very high amounts)
- nicotine (none to very high amounts)



What are the health effects of using vaping products?

Vaping products DO HAVE an impact on health. The toxic chemicals in the aerosol lead to short-term respiratory and cardiovascular health effects and may cause cancer.

The long-term health effects of using vaping products are currently unknown and continue to be studied.

Vaping products that contain nicotine can lead to nicotine addiction and physical dependence. The immediate response to nicotine includes increased heart rate and blood pressure. Youth are particularly susceptible to the negative effects of nicotine.

It can alter brain development, affect memory, concentration, and mood.

Are vaping products less harmful than cigarettes?

For people who smoke, vaping products may be considered a less harmful alternative. This is because the aerosol contains fewer toxic chemicals compared to cigarettes. However, given the potential and unknown harms of vaping products, people who do not smoke, should NOT vape.

Normal Lung: Dark areas indicate healthy lung tissues allowing for good oxygen exchange.
Vaping Lung: White discolouration indicates hardening/thickening of the lung tissue which indicates potential for decreased lung function and irreversible damage.

Vaping studies supported by Alberta Lung are currently underway at the University of Alberta through our provincial research grant program. Early results show that vaping is linked to whole body and airway specific inflammation linked to disease. Research is looking at the health effects of different combinations of vape flavourings and compounds in vapes.

Send a letter to your MLA to support a ban on youth enticement flavours at:

<https://ablung.ca/wp-content/uploads/2023/11/MLA-EMAIL-TEMPLATE.pdf>

Are vaping products legal in Canada?

Vaping products are legal in Canada. However, there are both federal and provincial laws that govern how they are produced, labelled, promoted, and sold. Advocacy is underway to limit flavouring that entice youth.

The use of vaping products by youth is becoming increasingly common. There are some misconceptions about the aerosol (vapour or cloud) produced, and currently the long-term health effects are unknown. As caregivers, you can connect and discuss issues around vaping products with your child. The information provided in these resources is designed to inform and help you start the conversation.

Reasons why people use vaping products:

- Flavours are appealing (e.g. fruit, candy, mint) and the devices are trendy
- Their friends are vaping; it helps them fit in.
- Curiosity and/or boredom
- They consider vaping to be harmless
- They like the 'hit' from nicotine; it increases feelings of pleasure
- It makes them feel rebellious or in control; some vape in places they are not allowed as it is easy to hide the vaping device
- To quit or cut down on smoking tobacco. Note that there is minimal evidence to suggest it is a successful cessation tool. The inventor of the vape, pharmacist Hon Lik, notably still smokes, and now vapes too

Start a conversation

Have honest conversations. If you use tobacco or vaping products, this is an opportunity to discuss the risks, any regrets, difficulties, and health effects you may have experienced. Disease risk is unique to the individual, some get sick quickly, while others may take years. It's not worth it to find out which one you will be especially when these companies won't be caring for you or paying for treatment.

Be patient and ready to listen when taking part in conversations with youth. Try to avoid criticism and encourage an open dialogue. Remember to keep the discussion going, and do not expect to make an impact with just one conversation.

Questions you may be asked

Following are some questions your child may ask about vaping products along with suggestions on how to respond.

“Why shouldn’t I vape?”

Researchers have found that vaping products contain toxic and addictive ingredients that could harm your body. When people breathe in the vapour, they inhale tiny particles that get trapped in the lungs. Vaping e-juice that contains nicotine can be delivered to the brain and lead to nicotine addiction.

“What is the big deal with nicotine?”

Our brains continue to develop until about the age of 25 years. Nicotine use during this period can cause problems with concentration, learning and impulse control. Once you start using nicotine, you can become addicted and physically dependent, keeping you coming back for more.

“Is vaping nicotine-free e-juice safe?”

Studies have found that many vaping products labelled ‘nicotine-free’ still contain trace nicotine. Inhaling nicotine-free vapour is still a health concern.

“Isn’t the cloud produced when vaping just water vapour?”

Once e-juice is heated, several toxic chemicals are created. Many are cancer causing:

- heavy metals: chromium, nickel and lead
- carbonyls: formaldehyde, aldehyde
- tobacco-specific nitrosamines
- volatile organic compounds (VOCs): benzene, toluene, ethanol, and alcohol
- polycyclic aromatic hydrocarbons (PAHs): group of more than 100 chemicals (e.g. Benzo[a]pyrene)
- tiny particles (particulate matter): mixture of all solid and liquid particles

If you are around friends who vape, the cloud exhaled exposes you to chemicals that may not be safe to breathe. Second hand vapour is linked to health issues and can even irritate your pets' lungs.

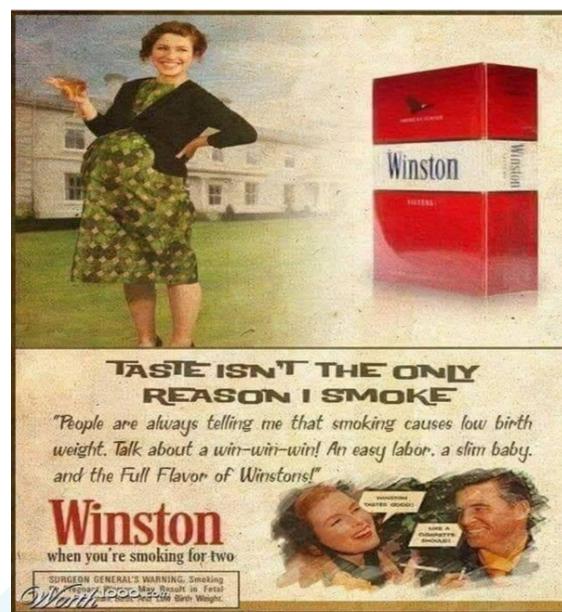
The ad to the right is a smoking ad from the 1970s. When research showed it led to low birth weight in babies (a known health risk), the company tried to spin it as "slim babies and easy labour".

“Isn’t vaping safer than smoking cigarettes?”

Vaping is less harmful than tobacco products such as cigarettes, but it is not safe. There are still many health concerns with vaping given the presence of chemicals, toxic compounds, and nicotine.

Short-term health effects are increased coughing, and wheezing, inflammation of the lungs and increased heart rate. Research is underway regarding long term effects. Deaths and comas have been reported in severe cases. Vaping products can explode, causing fires that may result in injuries. It also creates toxic electronic waste.

- vapour is not harmless
- high nicotine content – very addictive
- flavourings appeal to youth.
- easy to hide and use, may look like a USB or a flash drive- could recharge on a USB port
- sometimes called ‘juuling’ or ‘breezing’



VAPING PRODUCTS
E-cigarettes, vapes, vape pens, mods (box or pod), tanks, e-hookahs

PARTS OF A VAPING DEVICE

- MOUTHPIECE
- ATOMIZER heats the e-juice to make vapour
- TANK/CARTRIDGE a chamber that holds the e-juice
- BATTERY heats the atomizer
- E-JUICE usually contains nicotine and other chemicals

WHAT'S IN THE VAPOUR?

Flavours + Nicotine (none to very high amounts) + • Volatile Organic Compounds (VOCs) • Carbonyls • Tiny particles = Many toxic heavy metals

Cr Ni Pb
Chromium, Nickel, Lead

HEALTH EFFECTS OF NICOTINE

- Alters brain development
- Negatively affects memory, concentration, and mood
- Increases anxiety and stress
- Increases heart rate and blood pressure
- Highly addictive

FAQ ABOUT VAPING

Why is vaping such a big problem?

It is marketed as cool, discreet and relatively safe. A wide variety of fun flavours make it appealing to youth. While e-cigarettes were invented as a smoking cessation tool, it has become the 'new smoking'. There is little regulation on chemicals used, many of which are harmful- like menthol and strawberry flavouring- according to recent studies, and in a myriad of new combinations- some of which youth mix themselves. They are essentially guinea pigs as the vaping industry rolls out new formulas that do not have safety data regarding inhalation. Studies have shown that labelling is often incorrect as well, with underreported chemical percentages. It's bad for vapers' lungs, others lungs (secondhand vapour smoke) and environment (toxic e-waste and conflict metals).

How do I talk to youth about vaping? Don't lecture, if possible bring it up naturally- for example, while seeing someone vape or a vaping advertisement. Ask them what they know about vaping. Explain that there are a lot of chemicals known to cause harm and few safeguards. Inform them that the fun flavouring and discreet design are specifically intended to get them addicted- even nicotine free vapes contain addictive chemicals. Inform them that cigarettes used to allow flavourings, etc. And this is just a way for the companies to create new consumers.

Companies are circumventing anti-smoking laws to make money off vaping regardless of health impact. Studies even show that labelling is incorrect. A common argument is that it's safe or there isn't enough data yet- there is data however and give them these articles to read for themselves. Encourage them to think critically about risking their health to be a guinea pig for the vaping industry.

Lead by example- if you vape or smoke, your message is less effective. It can be easy to feel pressured and when you are younger, health stuff can seem less important. Encourage them to have planned responses as an 'out' when they are pressured- for example, it makes them feel ill. Some youth report that even secondhand exposure made them feel ill, gave them headaches.

Is the government doing anything to address youth vaping? While vaping is legal for those 18+ years old, the enticing flavours and lack of oversight make it appealing and easy for youth to be targeted. Alberta Lung is pushing for stronger action to prevent youth vaping. The recently announced provincial Tobacco and Vaping Reduction Strategy, once implemented, will provide resources for schools and tools to quit.

Common rebuttals:

Aren't e-cigarettes safer than conventional cigarettes? Safer does not mean safe. E-cigarettes are harmful in their own right and new research is showing it is harmful in ways different from traditional smoking.

If it is dangerous, why aren't there more laws against it? It is relatively new technology and evolving quickly. Governments take time to act. Smoking was legal and even encouraged for a long time before laws against it came into effect. Tobacco companies even funded biased research to minimize the health effects of their products. Health is more important than waiting for the law to limit use. Some e-cigarette batteries have even exploded.

I (or my friends) tried e-cigarettes- isn't it no big deal? Thank them for their honesty if they are a youth. Science shows that e-cigarettes contain ingredients that are addictive and could harm different parts of your body. The damage it does is hard to see and not immediately noticeable which may be why it seems like no big deal. The risks are real though and the companies will not pay for treatment or even care when you get sick from their product as it is designed to be habit forming.

I'm a youth- how do I talk to peers or family about quitting vaping, or even smoking?

Pressure is real! Studies have shown that the majority started due to pressure and would quit if they could. Have an open-ended, nonjudgmental conversation about how you feel about vaping/smoking, the risks and offer support. Offer supports to quit and healthy distractions, etc. to make quitting easier. Things like drinking sparkling water to emulate the throat feel, shelling sunflower seeds to keep hands and mouth busy and chewing sugar free gum can help. Health Canada has launched a program to help young adults and youth quit, called I Quit For Me at <https://www.canada.ca/en/health-canada/services/publications/healthy-living/i-quit-for-me-guide-youth.html>

For more information on vaping see <https://ablung.ca/lung-health/tobacco-ecigarettes-cannabis/> or to book a Breathe Smart session visit <https://ablung.ca/lung-disease-support/breathe-smart-education-program/>