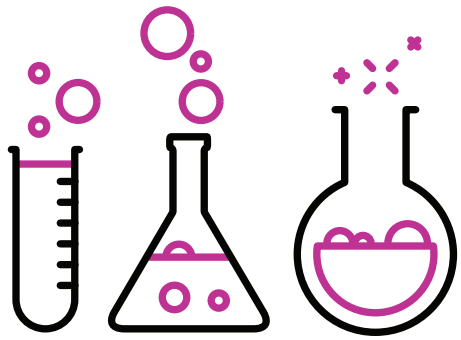
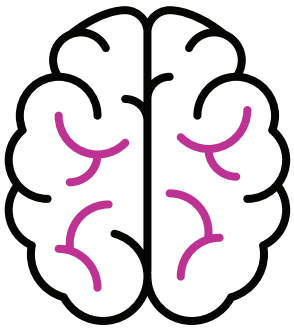
THE FACTS ABOUT VAPING

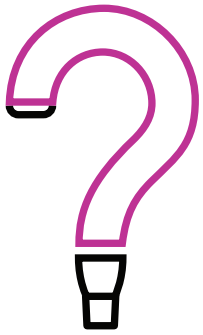
RESPECT YOUR BRAIN



Vapes can contain over ***200 chemicals*** known to harm human health. In the short term vaping has been shown to cause damage to the lungs and throat, and lead to nicotine overdose. Because vapes haven't been around for very long, the long-term effects of vaping simply aren't well known.



Nicotine is incredibly addictive. Exposing young brains to nicotine early can rewire your brain to be more addicted to substances into adulthood.



There are no guidelines for what is on vape labels. That means ***you can't be certain what's in them.*** Most vapes contain nicotine, even if they don't say so.

1. What are vapes?

Vapes are also known as electronic cigarettes, e-cigarettes, vape pens, pod, JUUL, or stigs. There are many different types but all have the same basic parts, like you can see in the picture: a battery, a coil and a cartridge. When the battery is switched on, the coil heats up the e-liquid, which produces an aerosol that is inhaled.

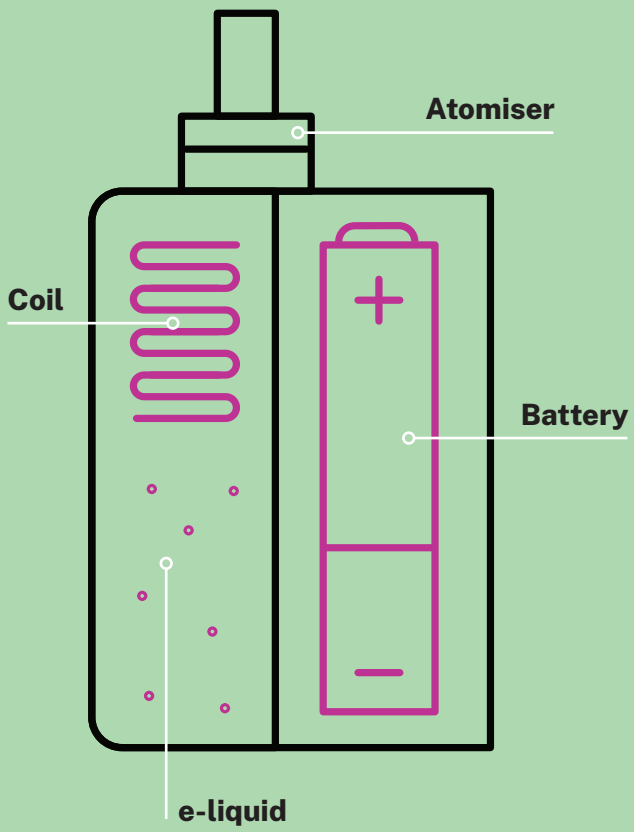
Many disposable vapes are one piece, with no removable parts, and the e-liquid is stored inside a small pod inside the vape. Others are refillable and parts can be changed.[1]

2. What's in a vape?

Vapes can contain over 200 chemicals.[2] Chemicals from vapes come from three main sources including:

- the e-liquid **ingredients**;
- the **chemical reactions** created when the e-liquid is heated, and;
- **contaminant chemicals** that appear in the e-liquid over time (such as heavy metals from the device leaking into the liquid)[2].

All of these chemicals are inhaled when you use vapes.[3] Research studies that have tested the e-liquid and the aerosol from the same vape have found that all of the chemicals in the e-liquid are found in the aerosol, plus the extra chemicals from chemical reactions and contaminants.[3] More details about these chemicals are shown in Table 1.



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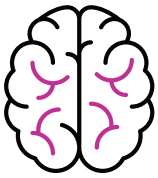
3. Can vaping harm my health?

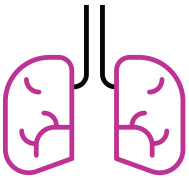
Vapes have not been around for a very long time, so we don't yet know what the long-term effects may be. But we already know that vapes harm key parts of the body.



Vaping can impact the brain

Nicotine is highly addictive. Using nicotine-containing vapes means you can develop nicotine dependence. This is when you need nicotine all the time to feel normal, otherwise you experience withdrawal symptoms like irritability, low mood, and even tremors. Young people's brains are very 'neuroplastic' meaning that the structure can change to adapt to environmental factors. Exposure to nicotine can rewire your brain to be more addicted to nicotine and other substances into adulthood. Vapes can deliver nicotine at higher doses and in some cases, more rapidly than regular cigarettes. Small vapes can contain as much nicotine as 50 cigarettes (often much more!). Nicotine at such high doses is toxic, and can even lead to seizures.[4] Nicotine overdose is sometimes called being 'nic-sick' and symptoms include nausea, vomiting, upset stomach, sweating, dizziness and headache.

Vaping can also lead to worse mental health, both in the short and long term. Vaping has been found to be associated with increased symptoms of depression within 12 months of starting.[5] In the long term, nicotine vaping can increase the likelihood of developing depression, anxiety and substance use disorders because of the way nicotine changes the brain's reward pathway.[6] There is strong evidence that vaping can increase the chance of smoking cigarettes,[7] as well as other substances, such as marijuana.[6]

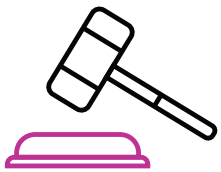


Vaping can impact the lungs and airways

When you inhale the aerosol from a vape, your mouth, throat and lungs are exposed to over 200 chemicals. These particles can damage your airways, including irritating the mouth, throat and oesophagus leading to a sore, dry throat and cough. For some people, vaping can bring their asthma back and make it worse. The ultrafine particles contained in the aerosol can deposit on the lungs and cause lung disease like pneumonia which requires hospitalisation to treat.

In the US in 2019, 68 people died due to e-cigarette or vaping associated lung injury (also called EVALI), whereby a chemical component in the e-liquid called Vitamin E acetate caused signi cant damage to the lungs, leading to death.[8] Several cases of EVALI have been recorded in Australia, including deaths.[9] These health effects can occur regardless of whether the vape contains nicotine or not.

Using vapes also puts people at risk of burns from the device and poisoning from nicotine e-liquid.[10]



4. Is vaping legal?

It is illegal to:

- sell vapes (and all other tobacco products) to anyone under 18 years old
- to sell nicotine vapes to anyone, unless they are prescribed by a doctor for smoking cessation purposes and obtained with a prescription from a pharmacy.

Common vaping myths

Myth	Fact
Vaping is just breathing in water vapour	The substance produced by vapes is an aerosol which contains tiny particles. This includes over 200 chemicals, some of which are known to cause cancer.
Vapes without nicotine aren't harmful	Most of the health effects from vaping come from the chemicals in the e-liquid, whether nicotine is there is not. In fact, most of the chemicals are from the flavourings.
My vape doesn't say it has nicotine in it, so it's safe	The labels on most vapes cannot be trusted. When they have been tested, almost all vapes labelled as non-nicotine had high levels of nicotine in them.
Vaping relieves stress	Vaping can actually worsen stress, by producing withdrawal symptoms, making it seem like vaping makes you feel better. The only way to end this cycle is to stop vaping and use other relaxation methods instead.

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Table 1. Chemicals contained in vapes and their health impacts

Chemical group	Chemical details	Other uses and health impacts
e-liquid ingredients These are chemicals that have been added to the e-liquids on purpose	Propylene glycol	Used in **antifreeze**.
	Ethylene glycol	Large amounts are toxic and can **damage your nervous system**, also used in **antifreeze**.
	Glycerine	Often used in food but when you breathe it in it **can damage the airways**.[11]
	Toluene	A chemical used in **paint thinner, permanent markers, glue and cement**
	Phenol	Comes from **coal tar** and used to make **detergents, bug spray and paint stripper** – can harm the eyes, skin, airways and nervous system, causing **seizures**. Breathing in for a long time can harm the **liver and kidneys**.
	Xylenes	Used to make **plastic bottles, paint thinner**, it slows down the nervous system and can cause **headaches, dizziness, nausea, vomiting** and slow down your reaction time.
	Ethyl acetate	Used in **nail polish remover,** and can harm the eyes, nose and throat and slow down the nervous system.
	Methanol	The purest form of alcohol, can lead to death when small amounts are swallowed and can cause blindness.
	Pyridine	Used in **bug spray**, is **toxic** and **flammable**. When burnt it makes **carbon monoxide** – a poisonous gas that's in **car exhaust**. When you breathe it in, it **hurts the throat**, slows down the nervous system and can cause dizziness, headache, nausea and can make you pass out.
	Acetylpyrazine, 2,3,5-trimethylpyrazine	These chemicals are used to make the flavours. **They are not made to be inhaled so can damage your throat and lungs.**
	Benzene, ethylbenzene, styrene[12]	Are used to **make petrol and are known to cause cancer** (carcinogenic). Benzene is the biggest air-borne cause of cancer in countries like Australia and America and one of the **main ingredients in cigarettes that causes cancer**. [11]
	Nicotine	Nicotine is a drug that can make you feel relaxed and stimulated. It hits your brain within seconds of breathing it in, making your heart race. **"Nicotine dependence" is when you need nicotine all the time to feel normal and it can develop quickly**. Over time, the number of receptors in the brain that use nicotine increases, meaning you need more nicotine to satisfy them. When you don't have nicotine, you get withdrawal symptoms like grouchiness, stress, anxiety, cravings, poor sleep and the shakes. Nicotine is in most vapes, even if the label doesn't say so.
Chemical reactions These are new chemicals that are created via chemical reactions when the coil heats the e-liquid.	Aldehydes (predominantly acetaldehyde and formaldehyde)	**Acetaldehyde can cause cancer**. It harms the skin, eyes, nose, mouth and throat and can cause nausea, vomiting and headaches.[13] Formaldehyde is also cancer-causing and highly toxic.
	Acrolein (propenal)	Acrolein is **very harmful to the skin, eyes and nasal passages**.
	Free radicals and reactive oxygen species and furans	Free radicals are very 'reactive' and **harmful to human tissue**.
Contaminant chemicals These are chemicals that 'leak' into the e-liquid and aerosol from the materials the e-cigarette device is made of, including metals and plastic.	Metals, with the following having been reported in aerosols: aluminium, antimony, arsenic, boron, cadmium, chromium, copper, iron, lanthanum, lead, nickel, potassium, silver, tin, titanium, zinc	Heavy metals are known to be very toxic to humans. **Chromium and arsenic cause cancer**. Breathing in a lot of heavy metals can poison you, causing long-term health effects and death.

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