

Vaping: Is it all just smoke and mirrors?

With the vast increase in Vaping being led by the thought it can stop a users addiction of smoking, do we really have all the facts we need to determine if this is the truth?





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Introduction

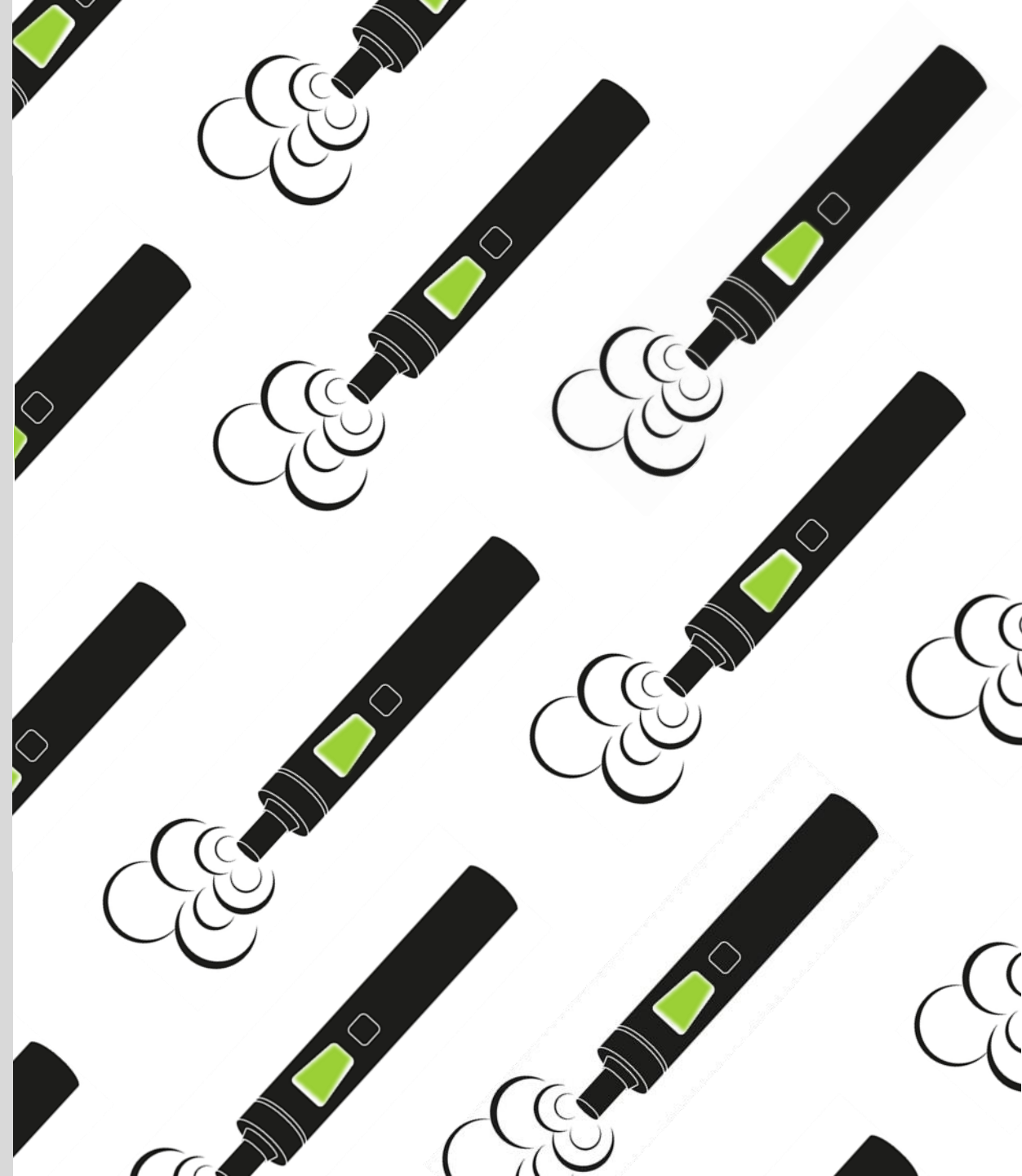
Although e-cigarettes date back to being invented in the 1920's, it wasn't until the mid 2000's that a Chinese company, owned by pharmacist Hon Lik, created the first modern vaping device to be sold on the high street.

Recently there has been a lot of media coverage regarding e-cigarettes and the affect that they have on human health, there is almost no proven scientific evidence to say that vaping is better for people than smoking.

We are all aware that smoking is able to cause many known illnesses and can commonly lead to death, but new stories have come to light recently, show that vaping has a huge detrimental effect in the same way that smoking does.

Laws have been implemented in the US since 2016 regarding the use of vape devices which states it is illegal to sell e-cigarettes to minors but advertising to adults is still permitted. There isn't as much concern that vaping will effect children in the UK in the same way, as we have strict limits on the levels of nicotine that can be included in e-liquids, whereas the US do not.

Considering e-cigarettes were introduced to the market as a less harmful alternative to smoking, there has been an increased concern that people have taken up vaping although they never smoked to begin with.



What is vaping?

Electronic Cigarettes (A vape) are small devices that use different flavoured nicotine oils, also known as e-juices, to create smoke in a vapour form.

A vaping device does not include or contain tobacco and therefore doesn't allow you to produce carbon monoxide or tar that can be formed from resins that are active in cigarettes.



How is vape oil (e-juice) made?

Vape juices are generally made by mixing together different flavours and nicotine with a solvent which is usually propylene glycol.

Sometimes people will optionally use vegetable glycerine. The solvent that is used within the mix is the main chemical that is included in the vape oil.

Propylene glycol is an organic chemical compound that is most commonly used within foods as an additive to improve the flavour, colour or texture of different products.



"Vaping is better than smoking"

Currently in the UK, there is estimated to be 3.6 million people who are vaping. It is becoming more and more common that people have taken up vaping in place of their addictive cigarette habit, as they believe that this will be "better" for them in the long run. It has been proven that if there is repeated high exposure to this vapour then very harmful risks could occur. Recently there have been many cases related to e-cigarettes and the effects that they can cause, including a large increase of lung disease, respiratory illnesses and some cases resulting in death.

There is evidence that has been published from a new study from **Public Health England** that suggested "e-cigarettes may one day be available on the NHS as a possible aid to give up smoking".

They also state that vaping is "40% Cheaper Than Smoking" which could be seen as another valuable reason for why there has been an increased number of purchases in e-cigarettes.

There is no scientific evidence to prove that vaping is safer for you than smoking.



Vaping and Chromatography

As Chromatography is our main focus here at Greyhound, there may be speculation why vaping would be a topic of interest for a company like ourselves. Although this is currently a huge subject to people all over the world and of very high importance to the vaping industry, there is an increased amount of people that now want to find answers for exactly what is being included in these products that they are consuming.

In order to test for the substances included, some form of Chromatography must be used, which is where we gain our interest from. Laboratories conducting these studies and daily research into Vaping effects on a person, need to have the correct materials in order to get the results that they want, which is where they would need to source supplies from a company like Greyhound.



A recent example of how Chromatography has been used to find out further information surrounding vaping has been published in an article by **Chromatography Today**. They stated that "Researchers have found that it is the flavour chemicals that raise the cytotoxicity - the quality of being toxic to cells - of electronic cigarettes. Many of the flavourings used in electronic cigarettes are regarded as safe - safe for ingestion that is, not inhalation. Strangely, the chemicals classed as flavourings have guidelines for inhalation for workers manufacturing or using them, but there are none currently for inhalation by electronic cigarettes."

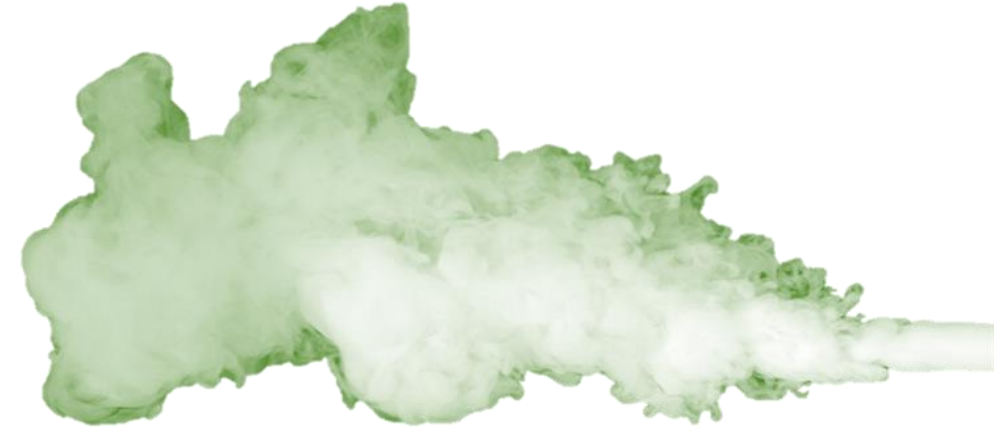
They also continued to identify that "In the study referenced above, researchers used gas chromatography - mass spectrometry to analyse the chemicals found in 277 refill fluids. They found over 150 different flavour chemicals in the samples tested - manufacturers have access to over 16000 different flavour chemicals."



Illnesses related to Vaping

Since vapes became the new trend, there have been numerous cases which have resulted in an increased number of fatalities and lung disease due to Vaping. No one fully understands what harmful chemicals are included in the vape oils that are used everyday.

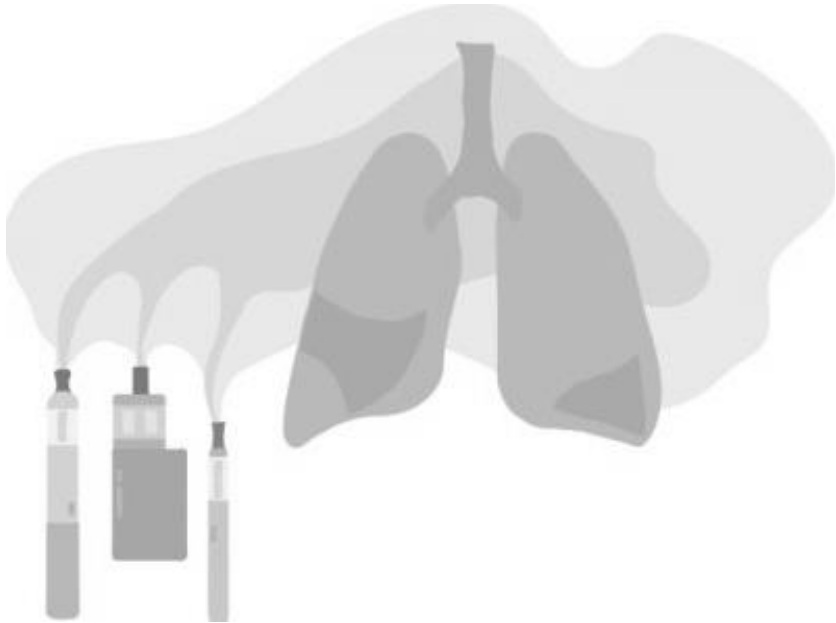
A study posted in **Forbes Magazine** stated "Chromium, lead, and nickel are known carcinogens. Prolonged exposure to lead can also trigger cardiovascular problems, and it's a potential catalyst of brain disorders affecting memory, processing speed and learning ability. Chromium is linked to gastrointestinal symptoms, respiratory distress and lung cancer. Nickel is also linked to lung disorders along with nasal cavity damage."



Cases of fatalities:

With vaping taking the world by storm, and an enlarged audience of people taking up this addictive habit to help them put a stop to the amount that they smoke, the number of deaths that have been related to Vaping has amplified drastically. There is no medical indication that can prove that e-cigarettes have killed these people, but there has been an extensive amount of research that has gone into trying to relate why any these deaths could have been linked to vaping.

The Independent quoted the following statement in a report written about deaths caused from vaping within the US "In the US an outbreak of **vaping**-related illnesses has been linked to **39 deaths** and **2,000** cases of lung injury, according to the Centres for Disease Control and Prevention. Health chiefs in the US are warning people to avoid **vaping** completely until the **cause** of the **deaths** is clear."



Lung disease/illness:

There have been many reports of lung disease and various illnesses that are believed to be related to Vaping, this is due to many unknown chemicals being included in different vape oils.

Harvard Medical School states in their blog surrounding the question 'Can vaping damage your lungs?' that "Experts aren't sure if vaping actually can cause these lung problems, but believe the most likely culprit is a contaminant, not an infectious agent. Possibilities include chemical irritation, or allergic or immune reactions to various chemicals or other substances in the inhaled vapours."

Popcorn lung is a medical condition in which small airways are blocked to a person's lungs, this results in shortness of breath and constant coughing. Many people believe this is caused from inhaling chemicals that are used in microwaved popcorn, but there is now speculation that this could also be caused through inhaling harmful vapours.

The chemical in question is called Diacetyl, studies from Cancer Research UK state that a study carried out in 2015 found traces of the chemical in many vaping products. "A large proportion of e-liquid flavours tested did contain some level of Diacetyl. The idea that e-cigarettes could cause popcorn lung came from these studies."



The article continued by saying "However, this study didn't review whether there was a link between e-cigarette use and popcorn lung. So far, there's no good evidence that Vaping could cause popcorn lung. In the UK, Diacetyl was banned in e-cigarette liquids under the EU Tobacco Products Directive (TPD) in 2016."

Alongside these medical findings, there has been accounts that people developed asthma and heart disease (cardiovascular) relating back to vaping, which is believed to have come from chemicals in the vape juice when it is inhaled.

Dopamine Hormones

What is the Dopamine Hormone?

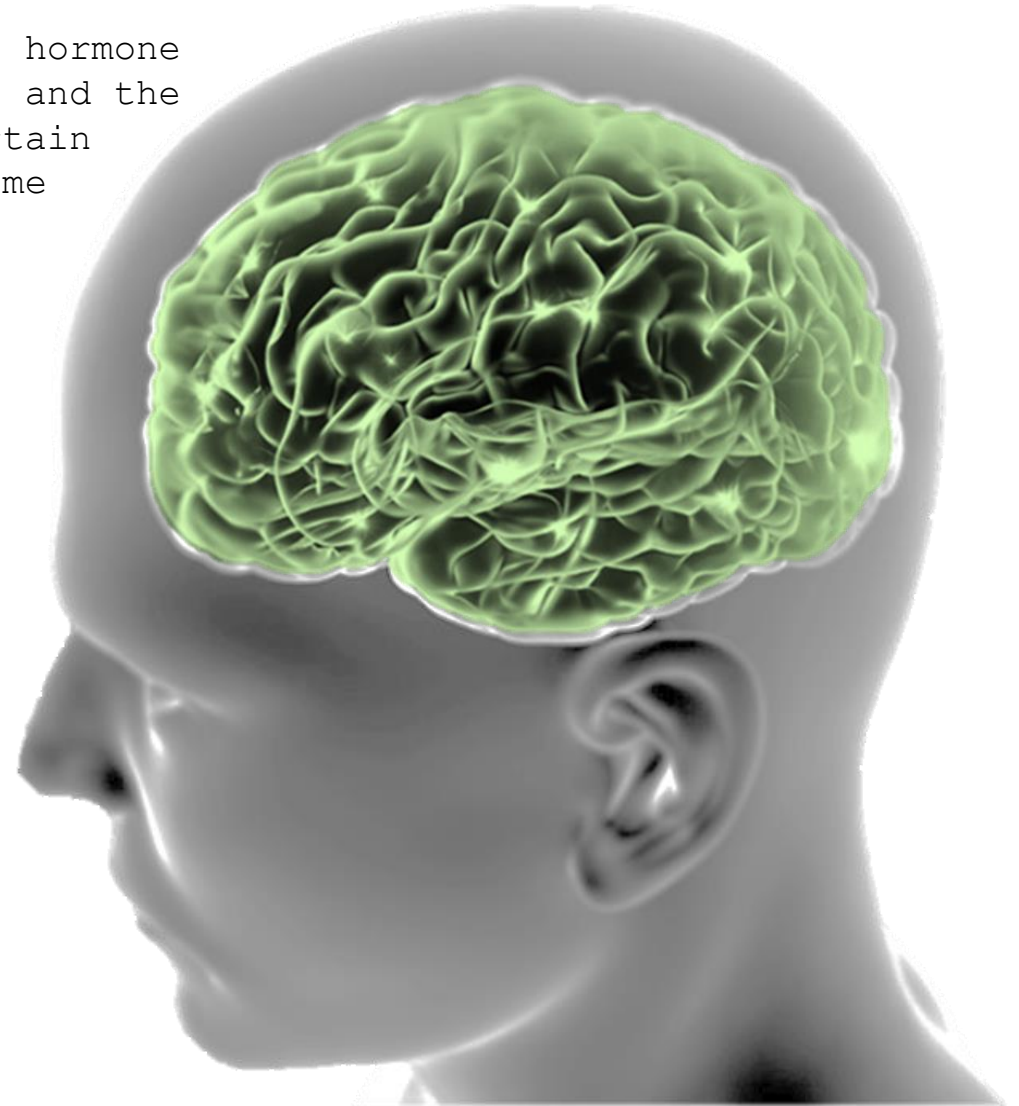
The Dopamine Hormone functions as a neurotransmitter as well as a hormone in the human body. It plays a lot of important roles in the brain and the body. Dopamine is also the reason that people get addicted to certain objects, foods, drinks. It trains the brain into repeating the same behaviour over and over.

Why does Dopamine effect Vapers?

Vaping is a habit that is picked up through the Dopamine Hormone teaching the body and brain that there is a pattern in their behaviour and that they need the nicotine that it provides, this is why it proves so difficult for people to quit their addiction.

Flavoured vape juices that are used in e-cigarettes contain nicotine, this is still able to cause an addiction for the user as Dopamine stems reinforcement and strengthens the brain to encourage their actions.

This is one of the main disadvantages to vaping as people believe that this will cure their addiction from smoking, as they don't realise that nicotine is still used within vape oils.



The scientific evidence

With almost no proven scientific evidence that can show that Vaping is better than smoking, there have been many case studies that focus on specific flavoured vape oils that could contain chemicals. These studies are used to find out if they can affect a person due to high amounts of toxicity. This means that over a period of time if the user of the e-cigarette remains vaping then they could be exposed to poisoning themselves from continuous usage.

This passage from **The Guardian** shows why more testing is needed on this subject as there is very little known about the effects and possible harm it could have on a person "Experts are not convinced that e-cigarettes can help people stop smoking and talk of potential harms and unknown risks rather than possible benefits."

E-Cigarette Ingredients

The following information has all been gathered as scientific testing into Vaping from **physiciansweekly.com** to give us a better insight into what is really contained in e-cigarettes.

"The flavouring additives, so popular with teenagers, have come under scrutiny. Study findings published in July (2018) in an American Heart Association journal suggest that e-cigarette flavourings may damage blood vessels and the heart. One study quantified six different pyrazine additives in e-cigarettes."

They continued by saying "Among the toxic chemicals found in e-cigarettes are aldehydes. One study looked at the respiratory uptake of formaldehyde and acetaldehyde specifically. The results showed that both were increased during vaping.

Many harmful trace metals have also been discovered in e-cigarettes. Nickel, chromium, cadmium, tin, aluminium, and lead have all been observed and are potential carcinogens, leading to both lung and sinonasal cancer and potentially oral cancer."



Conclusion

With more studies on vaping appearing all the time, and constant deaths and illnesses being flagged by vaping customers, is it really enough to make anyone avoid falling into the addictive habits that follow?

We think that many people would admit that they don't have the best indication as to what is included in vaping products and what they are actually inhaling on a daily basis, and how something that seems so harmless could be potentially deadly in extreme cases. After reviewing all the points made throughout this E-Book, we believe that no definitive conclusion can be made in regards to whether we have enough evidence to suffice if vaping is a better alternative for smokers, as there has been lots of cases in which people have fallen very ill with lung disease and there have been a number of reported deaths that have been supposedly linked to vaping.

As smoking is seen as one of the biggest killers in young adults, with the total continuing to rise each year, there are obvious reasons why users would want to swap over to vaping as this could be seen as more beneficial than smoking, as the e-cigarette was introduced to reduce the number in deaths and illnesses relating to cigarettes significantly.

We would advise that medical advice should be consulted first, in order to discuss potentially better alternatives before using vaping as a solution to quit smoking. We believe that scientific research will continue to find new effects of vaping and to discover what positives or negatives could come from people using this device as a substitute to cigarettes.



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