

E-cigarette and vaping fact sheet



What

Overall, there are two main types of e-cigarettes: (a) disposable and rechargeable devices that look like cigarettes or USBs; and (b) refillable vaporisers or tank systems that do not look like cigarettes.

E-cigarettes generally comprise four parts: the battery, the heating element, the vapourising chamber, and the solution cartridge. The battery supplies the power to the heating element, for it to become sufficiently warm to aerosolise the solution. The heating element is housed in a chamber, which also holds the aerosol until the user inhales. Some types of e-cigarettes allow users to control the voltage so they can select the amount of aerosol produced and nicotine concentration.

E-cigarette use is commonly referred to as “vaping” due to the vaporising chamber of the device.

Who/origins

The creation of the modern e-cigarette device is credited to Hon Lik, a Chinese pharmacist, who commercialised the modern vaping method in 2003¹. Almost all (90%) e-cigarette products sold globally are made in China, where there are around 1,000 manufacturers².

Transnational tobacco companies have made significant financial investments in acquiring start-up vape companies and developing new commercial e-cigarette lines. British American Tobacco (BAT) owns the global brand Vuse (which consolidates Vype, Ten Motives, Chic, VIP brand), Philip Morris International (PMI) own IQOS Mesh and has a significant stake in JUUL, Lorillard own the brand 'blueCig'; Japan Tobacco International own 'Logic' and 'Ploom'; and Imperial Tobacco have 'Puritane'.

Commercial profits

The global e-cigarettes (vaping) market was valued at about \$14.05 billion in 2018 and is expected to grow to \$29.39 billion through 2022³. The gross profit margin for manufacturers of e-cigarettes is estimated at around 70%⁴.

Deceptive & misleading claims & factoids

The claim that 'e-cigarettes are 95% safer than conventional cigarettes **is not true**.

This claim originated from a 2013 perception “estimate” in a workshop involving 12 people, some with links to the tobacco industry⁵. The “estimate” was based on the participants **perceptions of** harm. It is not based on scientific evidence. This claim was not based on chemical analysis, clinical studies or physiological or epidemiological research or evidence. The authors of the paper have subsequently stated that they “prefer” the summary of their work to be described as indicating that “smoking **is estimated to be** twenty times more harmful to users than vaping e-cigarettes”⁶.

Leading international public health experts agree that the oft-cited “95% safer” claim is an outdated subjective estimate; it does not reflect the current state of knowledge, is grossly misleading and

¹ Electronic cigarettes and health with special focus on cardiovascular effects: position paper of the European Association of Preventive Cardiology (EAPC) AND Grana R, Benowitz N, and Glantz SA. Background paper on e-cigarettes (electronic nicotine delivery systems).

² Technavio. Global e-cigarette market 2016-2020. 2016. Available from: <https://www.technavio.com/report/global-health-and-wellness-e-cigarette-market>

³ CISTON PRN Vaping Market to Reach a Value \$29.39 Billion at a CAGR of 20.3% From 2018-2022 | a Report From TBRC <https://www.prnewswire.com/news-releases/vaping-market-to-reach-a-value-29-39-billion-at-a-cagr-of-20-3-from-2018-2022-a-report-from-tbrc-300904265.html>. Accessed 050820

⁴ For Juul in the US. See AXIOS: Scoop: The numbers behind Juul's investor appeal

<https://www.axios.com/numbers-juul-investor-appeal-vaping-22c0a2f9-beb1-4a48-acee-5da64e3e2f82.html>. Accessed 050820

⁵ Nutt, D, et al. "Estimating the Harms of Nicotine-Containing Products Using the MCDA Approach." European Addiction Research, vol. 20, no. 5, 2014, pp. 218–225.

⁶ Nutt, D, et al. "E-Cigarettes Are Less Harmful than Smoking." *The Lancet*, vol. 387, no. 10024, 2016, pp. 1160–1162.

invalid⁷. The '95% safer' estimate is a "'factoid': unreliable information repeated so often that it becomes accepted as fact"⁸. The World Health Organization has publicly dismissed the 95% claim as "not based on evidence".

The Thoracic Society of Australia and New Zealand (TSANZ) have noted that "drawing conclusions about absolute exposure levels and associated risk based on comparisons between e-cigarettes and combustible tobacco use **is not possible**. There are thousands of e-liquid solution variants and a range of devices with different settings⁹."

Health impacts

E-cigarettes have been demonstrated to cause short-term adverse health effects including nausea, vomiting, mouth and airway irritation, chest pain and palpitations. The long-term health impacts of e-cigarettes remain largely unknown, but emerging evidence suggests that e-cigarettes increase the risk of respiratory diseases, cardiovascular diseases, cancer; cause slower wound healing, gum diseases, and eye irritation; and adversely impact the central nervous system.

Smoking cessation

E-cigarettes are not approved, nor are they allowed to be promoted in Australia, as a smoking cessation method. At any time, the companies that make and promote e-cigarettes can make an application to the Therapeutic Goods Administration (TGA) to have e-cigarettes listed as a smoking cessation method. To date, no e-cigarette manufacturer has made such an application.

In 2016, PMI made an application to sell e-cigarettes alongside conventional cigarettes, rather than as a smoking cessation method. The TGA rejected this application, stating that "there is a risk of nicotine dependence associated with use of Electronic Nicotine Delivery System (ENDS) – e-cigarettes. There is little evidence regarding the safety of long-term nicotine exposure via ENDS. Exposure to nicotine in adolescents may have long-term consequences for brain development, potentially leading to learning and anxiety disorders. The toxicity of long-term exposure to nicotine delivered by ENDS is unknown. Long-term exposure to excipients [other ingredients] via the ENDS route of exposure is uncertain."

At the population level there is no strong evidence that e-cigarettes assist smoking cessation and some evidence suggests the opposite effect.

Regulatory responsibility

The TGA have responsibility for determining whether and under what circumstances products containing nicotine are made available for use or consumption in Australia. The TGA is comprised of experts with significant experience in public health, medicine, toxicology, chemistry, law, agriculture, and occupational health and safety. The TGA is independent of the Australian Government and bases its decisions on well-established evidence. Australia is a signatory to the WHO Framework Convention on Tobacco Control, and all levels of Government, including the elected representatives of Australians must when setting and implementing public health policies with respect to tobacco control, act to protect these policies from commercial and other vested interests of the tobacco industry¹⁰.

⁷ Eisenberg T, Bhatnagar A, Chapman S, Jordt S, Shihadeh A, Soule E. "Invalidity of an Oft-Cited Estimate of the Relative Harms of Electronic Cigarettes." *AJPH*, 110(2), pp. 161–162

⁸ Ibid.

⁹ McDonald, CF, Jones, S, Beckert, L, et al. Electronic cigarettes: A position statement from the Thoracic Society of Australia and New Zealand*. *Respirology*. 2020; 1–8. <https://doi.org/10.1111/resp.13904>

¹⁰ Article 5.3.