

E-cigarettes: Where We Are in 2015

An Evolving Marketplace

When e-cigarettes appeared on the market, they were small metal or plastic cylinders designed to look like a real cigarette. Nicknamed ‘cigalikes’, these first generation devices consist of a battery, an atomizer (which heats and vaporizes the liquid) and a cartridge that contains propylene glycol or vegetable glycerin, plus chemical flavourings, water, and sometimes nicotine. They are often disposable, but rechargeable models are also available.

Second generation devices, or ‘tanks’, consist of a battery, an atomizer, a larger cylinder that holds e-liquid, and a mouthpiece. Because the battery is more powerful, these devices hold a charge longer and more consistently and produce a greater quantity of vapour that is hotter and denser and more closely resembles the ‘throat hit’ a smoker experiences when inhaling smoke from a tobacco cigarette.

A third generation of e-cigarettes is also available. These so-called ‘mods’ are much more powerful and customizable devices, which users can assemble themselves from individual components.

The battery voltage and atomizer resistance, as well as the temperature, density, and volume of vapour can be adjusted by the user.

Studies show that newer generation devices are much more effective at



delivering nicotine, with some capable of delivering an amount of nicotine similar to a typical cigarette. Some studies show that these devices generate more toxic chemicals, particularly carcinogens such as formaldehyde, because they operate at higher temperatures, but the specific toxins found and their concentrations vary considerably by device and liquid used.

E-cigarette users typically start with a first generation device, but various studies have found that experienced users greatly prefer tank models—they can be effective at delivering nicotine, they hold a charge longer and they don’t have to be refilled as often.

E-cigarettes are now available in a wide variety of retail venues across Canada, as well as via the internet. Convenience stores, gas stations, supermarkets, hardware stores, and pharmacies typically stock only cigalikes and for the most part only cartridges without nicotine, but this appears to be changing. E-cigarette specialty stores (vape shops) carry newer generation devices and offer a selection of devices, components, and e-liquids in a range of flavours and nicotine strengths, in addition to

guidance on which products to choose and how to use them. These devices can also be found in head shops, flea markets, and other non-traditional outlets.

E-cigarettes go by a number of different names, including personal vapourizers, vape pens, e-pens, and e-hookahs.

The Legal Landscape

Until very recently, e-cigarettes occupied a regulatory no-man’s-land in Canada. Although Health Canada declared in March 2009 that e-cigarettes that contain nicotine or that make a health claim are illegal, Health Canada has conducted few enforcement actions, other than issue “cease-and-desist” letters to premises openly selling e-cigarettes with nicotine.

As a result of pressure from provincial/territorial Health Ministers to act, in September 2014 the federal Health Minister referred the issue to the House of Commons Standing Committee on Health. In its report issued in March 2015, the Health Committee called for e-

cigarettes, both with and without nicotine, to be regulated under a new legislative framework (not the *Food and Drugs Act*, as they are now) or under the *Tobacco Act*. Among the Committee’s 13 other recommendations are the following key ones:

- Product standards
- Accurate labelling; no unproven health claims; child-safe packaging
- Ban on sales to minors
- Ban on use in federal workplaces
- Restrictions on advertising/promotion
- Ban on cross branding
- Ban on flavours targetting youth.

Are they legal?

E-cigarettes and cartridges/liquid with nicotine *cannot* legally be imported, sold, or marketed in Canada. (They must first be approved as a new drug by Health Canada.)

E-cigarettes that make a health claim—such as they can help you quit smoking — *cannot* legally be sold.

E-cigarettes with no nicotine and no health claim *can* legally be imported, marketed, and sold.

Although the federal government was required to respond within 120 days according to Parliamentary procedure—a date that fell before the federal election was called—no response was issued.

In the absence of federal action, provincial governments have been moving to mandate controls over e-cigarettes on matters within their purview. Seven provinces—Nova Scotia, New Brunswick, PEI, Ontario, British Columbia, Manitoba, and Quebec—have passed e-cigarette legislation in the past year.

The measures in the legislation are very similar—ban on sales to minors and bans on use of e-cigarettes in most places where smoking is banned, in particular indoor public places and workplaces and school property. The primary difference is the extent of controls on promotion and trial at point-of-sale. All provinces ban display and promotion at point-of-sale; however, most provinces permit in-store promotion and display in vape shops and tobacconists, provided minors are not permitted access. The Manitoba law permits testing and sampling of e-cigarettes in vape shops and provides regulatory authority to exempt bars and other adults-only premises from the ban on e-cigarette use.

Health Risks: An Update

An important scientific consensus on the health risks of using e-cigarettes has been achieved: researchers now agree that e-cigarettes pose substantially less risk to health than tobacco cigarettes, because they contain no tobacco and there is no combustion involved in vaping. The chemical constituents in cigarette smoke that are responsible for most of the health consequences are either not present in vapour or, if present, are for the most part at much lower concentrations than those in cigarette smoke.

Researchers and advocates continue to disagree, however, on what the extent of reduced risk is and whether this reduced risk translates into a net gain for both individual and population health. In its

2015 report, Public Health England (PHE) stated its support for “the current best estimate that using EC [electronic cigarettes] is about 95% safer than smoking.” This figure originated from a panel of international experts who developed assessments of the relative risks of various nicotine-containing products. The panelists themselves acknowledge a “lack of hard evidence for the harms of most products on most of the criteria,” and a potentially significant conflict-of-interest has been documented for some of their members. As a result, PHE has been intensely criticized in several prominent journals, including *The Lancet* and *The British Medical Journal*, for both

the conclusions of its report and the quality of its peer review process.

A systematic review of the literature by the Danish Research Centre for Prevention and Health published in 2014, which was not included in the PHE evidence review, reached a different conclusion: “Due to many methodological problems, severe conflicts of interest, the relatively few and often small studies, the inconsistencies and contradictions in results, and the lack of long-term follow-up, no firm conclusions can be drawn on the safety of ECs. However, they can hardly be considered harmless.”

Cessation Effectiveness: A Continuing Lack of Clarity

Researchers are no closer to agreeing on whether e-cigarettes promote or undermine smoking cessation. The 2014 Cochrane Review concluded that “ECs help smokers to stop smoking long-term compared with placebo ECs”; however, the quality of the evidence included in the review (2 randomized controlled trials and 11 cohort studies) was rated “low” to “very low,” meaning that the authors’ confidence in the results was likewise rated “low.”

A recent systematic review of the literature by the Ontario Tobacco Research Unit identified 49 studies assessing the

effectiveness of e-cigarettes as a cessation aid, of which only 3 were rated strong, 23 were rated moderate, and another 23 weak. The researchers concluded that the evidence regarding the effectiveness of e-cigarettes as a quit aid is *inconclusive* and that overall the quality of the evidence is very low to low, due primarily to the methodological weaknesses of current studies. Evidence of the effectiveness of e-cigarette use for smoking reduction is slightly stronger but is similarly rated as being of low to moderate quality.

Electronic Cigarettes Act, 2015 (Ontario)

In effect: 1 January 2016

- Ban on the sale and supply to minors under 19 years
- Ban on the use of e-cigarettes in most places where smoking is banned, including in indoor public places and workplaces, on school property, and in cars carrying minors under 16 years
- Ban on sale of e-cigarettes in hospitals, nursing homes, psychiatric facilities, pharmacies; in self-service vending machines

In effect on a date to be determined

- Ban on point-of-sale promotion
- Ban on retail display
- Ban on promotion of e-cigarettes by a person in a place of entertainment
- Requirement that point-of-sale signage comply with the regulations

Additional regulatory authority regarding

- Additional places where e-cigarette sales are banned
- The packaging of electronic cigarettes, including a requirement for pack-based warnings
- The banning of specified flavours