High Council for Public Health

OPINION

concerning the risks and benefits in the use of electronic cigarettes by the general population

22 February 2016

EXECUTIVE SUMMARY

Following a publication by Public Health England that reaches a mostly favourable conclusion regarding electronic cigarettes, some French healthcare professionals along with an association of electronic cigarette (e-cigarette) users voiced their request through the media for these cigarettes to be adopted as a smoking cessation and risk reduction tool within the French National Tobacco Control Plan.

The French General Directorate for Health (DGS) and French Inter-Ministerial Mission on Fighting Drugs and Addictive Practices (Mild&ca) thus jointly submitted a formal request to the French High Council for Public Health (HCSP) on 21 October 2015 to update the opinion dated 25 April 2014 concerning the risks and benefits in the use of e-cigarettes by the general population.

This formal request asks that the situation be re-assessed under the following terms:

- Are e-cigarettes a smoking cessation tool? Are e-cigarettes a tool for reducing the risks of tobacco?
- Could e-cigarettes act as a route into smoking? Could e-cigarettes make tobacco consumption seem normal again?

The HCSP has found that e-cigarettes:

- can be considered a smoking cessation aid for smokers who would like to completely break their habit;
- are a tool for reducing the risks of smoking. However, for smokers who also use e-cigarettes, the debate continues;
- may act as a route into smoking.
    - This risk would be offset by the fact that e-cigarettes could delay the age at which people start smoking.
- run a risk of renormalising tobacco consumption given the rosy picture painted by its marketing and visibility in public spaces.

The HCSP recommends:

- **continuing and stepping up tobacco control policies;**
- **informing, without resorting to advertising, healthcare professionals and smokers that e-cigarettes:**

  - are a smoking cessation aid for smokers who wish to quit; appear to be a means of reducing the risks of tobacco when used exclusively. The advantages and disadvantages must be highlighted.

- upholding the advertising and sales prohibition arrangements stipulated by the law for modernising the French health service and extending the prohibition on use to all places designed for collective occupation.

The HCSP calls for:

- the French observational scheme regarding smoking to be reinforced, robust epidemiological and clinical studies on e-cigarettes to be conducted and research in the humanities and social sciences to be undertaken on this question;

- the status of e-cigarettes and refill containers to be clarified;

- labelling and marking efforts to be continued to ensure consumers are given as much information as possible and for the sake of their safety;

- the stakeholders concerned – the pharmaceuticals industry in particular – to discuss the creation of a "medicalised" electronic cigarette;

- heightened responsiveness on the part of public authorities to "technological innovations purporting a public health benefit" presented on the market with no prior regulations;

- the World Health Organisation to issue general recommendations on e-cigarettes which would bolster a future version of the Framework Convention on Tobacco Control.

Context

The HCSP's first opinion on e-cigarettes sought to be prudent in its recommendations (HCSP, 2014). It underscored not only the fact that the availability of a new method of nicotine delivery among the general population could have negative consequences, such as renormalising tobacco consumption, but also and above all the risk of young people experimenting with this molecule. E-cigarettes could represent a conduit to nicotine dependency and possibly a route into tobacco consumption. It also acknowledged that e-cigarettes were potential tools for reducing the risks of smoking, and even a nicotine abstinence aid. The risk-benefit ratio, due to the lack of scientific knowledge on the subject, led to a prudent conclusion being drawn on this new device for delivering vapour – which may or may not contain nicotine.

The context has since changed and certain gaps in scientific knowledge have been filled. A recent British report (Public Health England, 2015) adopts a positive stance in favour of e-cigarette use as both a means of reducing the risks of smoking, and a tool for achieving nicotine abstinence[1]. Many French associations for smoking cessation, promoting risk reduction, e-cigarette users and healthcare professionals have, for several months now, been calling for the status of electronic cigarettes to be clarified and for this device for delivering vapour (which may or may not contain nicotine) to be included as a tool for stopping smoking and reducing risks in the French National Tobacco Control Plan. This is the context in which the DGS and Mild&ca have jointly submitted a formal request to the HCSP to update the previous opinion. The questions raised as part of this formal request set out the risks and benefits of e-cigarette use in the general population.

On the one hand, do e-cigarettes help smokers to cut down on or even completely stop smoking? Do they lead to nicotine abstinence? Are they a comparatively more effective means of stopping smoking than other devices which already exist?

On the other hand, do e-cigarettes act as a route into smoking? Which populations are primarily concerned? Is there a risk of tobacco consumption being renormalised?

Caveat

Mindful of basing its recommendations on robust scientific evidence, the HCSP can only highlight the interpretation difficulties raised by the data available on e-cigarettes. As shown in the most recent Cochrane publication (McRobbie et *al*., 2014), there are not enough randomised cross-over trials – the only method allowing for the efficacy of e-cigarettes as a tobacco abstinence tool to be confirmed or invalidated – to furnish irrefutable scientific evidence. There are only two to date (Bullen et *al*., 2013; Caponnetto et *al*., 2013a). Moreover, due to swift changes in how e-cigarettes are being used and in their accompanying technology, the methods taken to assess them over the medium and long term, such as cohort follow-up studies, carry a risk of bias. Consequently we do not have access to findings that correspond to the most recent devices and products available.

Although non-experimental study findings can readily be found in the scientific literature on the subject, any that shed more or less indisputable light on the risk-benefit ratio of e-cigarettes are few and far between. This means that since this opinion seeks to be as objective as possible, it is based solely on the most robust scientific data available to date, as well as a series of interviews with the various stakeholders on the issue of e-cigarettes in France.

[1] At the same time, a Norwegian report on the health risks associated with the use of e-cigarettes with or without nicotine drew a less enthusiastic conclusion. Although it underscored the steep decline in the cancer onset risk compared with tobacco consumption, it also brought other potential or unknown health effects of nicotine and e-liquids to the fore. (NIPH, 2015).

The HCSP has taken the following into consideration

1. The high prevalence of smoking in France

According to the most recent findings of the health survey conducted by the French National Institute for Prevention and Health Education (Inpes) in 2014 (*Baromètre santé*, Guignard et *al*., 2015), smoking prevalence in France seems to have plateaued after climbing between 2005 and 2010. Among 15-75 year olds, 34.1% claim to be current smokers[2] of which 28.2% smoke every day[3]. This stabilisation in smoking prevalence masks a slight dip in regular tobacco consumption from 29.1% to 28.2% between 2010 and 2014, mainly due to the decline in daily tobacco consumption among women (down from 26% to 24.3%), and an increase in occasional smoking, which has risen from 4.6% to 5.9%.

Slightly less tobacco is now consumed, down from 11.9 to 11.3 cigarettes per day between 2010 and 2014. The proportion of former smokers is also on the rise: from 29.2% in 2010 to 31% in 2014, as is the percentage of people claiming to have tried quitting (up from 25.2 to 29%).

Regarding 17 year olds, regular smoking increased between 2011 and 2014, from 31.5% to 32.4% as shown in the Escapad 2014 survey (Spilka et *al*., 2015b). This upward trend is due to the rise in daily smoking among teenage girls, from 30.2% to 31.9%, whereas this indicator has remained stable for teenage boys (33%). Smoking is not as intense among girls of this age as it is among boys, however: the percentage of smokers consuming more than ten cigarettes a day is much lower in girls than boys (6.1% *vs* 9.3%). In secondary school students, cigarette experimentation has remained stable overall between 2010 and 2014 according to the HBSC survey, with prevalences ranging from 10% in Year 7 (6th grade) to 49% in Year 10 (9th grade). Daily smoking seems to be on the wane among Years 9 and 10 (8th and 9th grade), down from 11.8% in 2010 to 8.9% in 2014 (Spilka et *al*., 2015a).

2. The prevalence of e-cigarette users

In 2014, according to the 2014 *Baromètre santé* (Health Survey), 25.7% of 15 to 75 year olds claim to have already tried an e-cigarette (Andler et *al*., 2015). Almost 6 out of 10 smokers (57.8%) claim to have experimented with e-cigarettes, while this experimentation prevalence is only 5.6% in people who have never smoked (or at least once or twice just to try it out).

Current e-cigarette use concerns 6% of the population aged between 15 and 75. 57.3% of this population segment use them daily, 30% weekly and 12.7% less often. Out of the general population as a whole, daily e-cigarette users account for 2.9%, so between 1.2 and 1.5 million people.[4]

Concomitant consumption of tobacco and e-cigarettes is predominant: 75% of e-cigarette users are regular smokers and 8.4% occasional smokers. 15% of these users are former smokers and 1.9% admit that they have never smoked tobacco. If we limit these indicators exclusively to daily e-cigarette users, these prevalences are 65.3%, 10.3%, 23.1% and 1.2% respectively. As pointed out by Guignard et *al*. (2015), out of the population aged between 15 and 75 as a whole, former smokers using e-cigarettes exclusively represent a mere 0.9%, while people who have never smoked but use e-cigarettes account for just 0.1%. In all, it would appear that 1% of the population uses e-cigarettes exclusively, so around 450,000 people.

The most recent version of the Escapad survey highlights that one in two 17 year olds claims to have used an e-cigarette at least once in their lifetime; 15% state that they have done so more than ten times. Daily use concerns 2.5% of 17 year olds: with a higher percentage of boys than

[2] Current smoking concerns people who claim to smoke tobacco, even if this is only from time to time.

[3] Regular or daily smoking concerns people who claim to smoke every day or indicate a number of cigarettes smoked per day.

[4] It is important to note that the 2014 *Baromètre santé* (Health Survey) only indicates these prevalences for people who have been using e-cigarettes for at least one month prior to the survey.

girls. 30.6% of daily e-cigarette users claim to smoke more than ten cigarettes in combination a day. For the other categories of e-cigarette users, combined use with tobacco now only accounts for 23.3%. As highlighted by Spilka et *al*. (2015c), e-cigarettes seem to represent more of a supplement for heavy smokers in this age group than a substitute.

In the youngest age groups, the most recent HBSC survey has found that four out of ten Year 9 and 10 (8th and 9th grade) pupils in secondary school claim to have already used an e-cigarette, but that daily use remains fairly low, at 1.9% of respondents in these year groups (Spilka et *al*., 2015a).

Even if it is difficult at present to outline trends or trajectories concerning e-cigarette use in France, primarily because of the lack of surveys with comparable methods, it would seem that the number of users is hovering around the three million mark.[5] According to the Special Eurobarometer on Attitudes of Europeans towards Tobacco, in March 2012 a little over 7% of French people said that they had tried an e-cigarette at least once. At the end of 2013, the ETINCEL survey from the French Monitoring Centre for Drugs and Drug Addiction (OFDT, Lermenier & Palle, 2014), put this figure at 18%, or two and a half times higher. According to this survey, monthly users accounted for 6%, 3.3% of whom were daily e-cigarette users. Only 1.3% of respondents claimed to use e-cigarettes exclusively.

3. How effective e-cigarette use is in tobacco and nicotine cessation

In 2014, manufactured cigarette sales fell along with roll-your-own tobacco sales; for the latter category of tobacco products this marks the first drop in sales since 2008. According to the 2014 *Baromètre santé* (Health Survey), attempts to give up smoking among 15-75 year olds have shot up. But at the same time, sales of smoking cessation treatments have fallen (Janssen & Lermenier-Jeannet, 2015), which suggests that French smokers who are trying to give up or cut down are switching from traditional nicotine replacement therapies to e-cigarettes.[6]

That said, scientific studies assessing the efficacy of e-cigarettes in nicotine abstinence (a relevant public health indicator) do not demonstrate that e-cigarettes, with or without nicotine, are radically more effective than the nicotine replacement therapy, the patch. The aforementioned Cochrane review (McRobbie et *al*., 2014), based mainly upon two randomised cross-over trials (Bullen et *al*., 2013; Caponnetto et *al*., 2013a), shows that there are no significant differences in six-month abstinence from tobacco consumption between e-cigarettes containing nicotine and patches; a significant reduction in smoking is nevertheless observed in favour of e-cigarettes containing nicotine compared with patches. In other words, with e-cigarettes containing nicotine, people who were motivated to stop smoking were not more successful at quitting than with patches, but smoked fewer cigarettes for all that.

A more recent systematic literature review (Ryad et *al*., 2015) reveals even more ambiguous findings. Compared with a placebo (e-cigarette without nicotine), an e-cigarette with nicotine does not prove to be any more effective at achieving nicotine abstinence beyond one month. Another meta-analysis (Rahman et *al*., 2015) casts doubt over these findings by demonstrating that the nicotine e-cigarette (*versus* non-nicotine) is effective at achieving six-month nicotine abstinence and reducing tobacco consumption. Lastly, the most recent meta-analysis discredits the efficacy of e-cigarettes in smoking cessation under non-controlled conditions, by showing that their use can, on the contrary, reduce the odds of quitting smoking by 28% (Kalkhoran & Glantz, 2016).

Because of the lack of sound randomised trials, none of these reviews and meta-analyses is able to demonstrate that e-cigarettes are effective at helping give up smoking. Their over-efficacy

[5] The difficulties of epidemiological studies stem partly from the fact that users differ depending not only on the type of e-cigarette but also on the e-liquid nicotine strength.

[6] According to the *Journal du Dimanche* dated 10 January 2016, cigarette sales reportedly rose by 1% in 2015, and roll-your-own tobacco sales by 6.3%. These figures are yet to be confirmed officially.

could depend on the type of e-cigarette used, the throat hit experienced by the user and certainly the e-liquid flavours and nicotine dosage (Dautzenberg & Dautzenberg, 2014). It could also depend on how motivated the user is to quit smoking (Ryad et *al*., 2015) or on certain characteristics of the study participants (Caponnetto et *al*., 2013b; Ryad et *al*., 2015). This explains why the French National Authority for Health, in an opinion dated November 2015 "*finds that the literature data on the efficacy and safety of electronic cigarettes is still insufficient to be able to recommend them for smoking cessation*" (HAS, 2015).

4. The reduction in the risks and harm caused by smoking that e-cigarette use represents

Smokers who use e-cigarettes, with or without nicotine, consume less tobacco than if they were using patches (see HCSP, 2014). According to data from the 2014 *Baromètre santé* (Health Survey), 82% of smokers who consume tobacco and use e-cigarettes (known as *vapofumeurs* in French) claim that e-cigarettes have helped them to cut down on their tobacco consumption (reported average decrease of 8.9 cigarettes per day) (Andler 2015). Although this data comes from a cross-sectional survey only, it nevertheless suggests that e-cigarette users who also consume tobacco, smoke less than before they began to use e-cigarettes, or in comparison with exclusive smokers. By cutting down on the amount of tobacco consumed, e-cigarettes can be considered a tool for risk reduction, at least in the short term.[7]

Furthermore, the advantage of e-liquids over tobacco and its most popular consumption method (burning) is that they cancel or significantly reduce the risks of serious diseases developing – primarily cancer (NIPH, 2015). In this respect, they are much less harmful than tobacco[8] even if other risks remain, emerge or are unknown to date. We therefore need to remain extremely vigilant as to the toxicity of such products.

5. The risks

5.1. Of nicotine

Nicotine use is not completely free from health effects. This is known and well documented. Nicotine is addictive in humans, produces anxiety and stress, has a long-term depressive effect, is an appetite suppressant, neurotoxic in children and has immuno-depressive effects that are implicated in the apoptosis process and potentially in carcinogenic processes. The risks of physiological or mental disorders developing as a result of nicotine consumption are high (see HCSP, 2014 and NIPH, 2015 for a list of nicotine-related disorders).

5.2. Of ingredients in e-liquids

In its April 2014 opinion, the HCSP indicated that e-liquid posed a low level of toxicity, whether in terms of active or passive inhalation, but at the same time stressed that "*there is very little documented information on the long-term toxicity of propylene glycol, vegetable glycerin and synthetic flavourings, etc.*" (HCSP, 2014). Amid the rising number of e-liquid flavours and brands today – over 460 brands of e-cigarette and 7,700 different flavours listed by Zhu et *al*. (2014) – toxicological knowledge on the specific ingredients of e-liquids is expanding, as evidenced by the recent publications studied below.

A recent study by Allen et *al*. (2015) shows that diacetyl, 2,3-Pentanedione and acetoine have been detected among the chemicals used to make e-liquid flavours. Out of a convenience sample of 51 e-liquids, whose flavours were deemed most appealing to young consumers[9], Allen et *al*.

[7] The tobacco exposure dose-time relationship is used to determine the excess risks of developing health problems, particularly cancer. By reducing one of these two variables, namely the dose, e-cigarettes theoretically reduce these risks of disease developing.

[8] We will not go with the figure put forward by Public Health England (2015) of 95% safer as, taken from Nutt et *al*. (2014), it is subject to discredit (Lancet Editorial, 2015) because of potential conflicts of interest concerning some of the study's authors.

[9] Fruit flavours (apple, banana, lemon, cherry, strawberry, etc.) and other cocktail flavours (piña colada), tobacco and vanilla for example.

(2015) demonstrate the presence of at least one of these chemicals in 47 liquids tested. Diacetyl was found at concentrations of over 239 µg/e-cigarette in 37 of the 51 e-liquids sampled.[10] The other two compounds were detected in 23 and 46 e-liquids analysed at concentrations up to 64 to 529 µg/e-cigarette respectively.

These chemicals, and particularly diacetyl, were not singled out by chance for the authors' research purposes. Indeed, diacetyl is a known food flavouring whose ingestion does not present any particular toxicity, but which, when inhaled after being heated, has been known to cause respiratory disorders which can become so severe that the only treatment option may be a lung transplant. Accordingly, in workers at a food processing plant[11] using diacetyl as an artificial flavouring, several cases of severe pulmonary disorders were diagnosed and attributed to the inhalation of heated diacetyl. This raised concerns among the US health authorities.

Moreover, Sussan et *al*. (2015) show under laboratory conditions that the pulmonary anti-bacterial defences in mice exposed to e-cigarette vapour for two weeks are impaired. The mice thus display increased risks of illness and mortality induced by such pulmonary viruses as Influenza A.

Another laboratory study conducted (Yu et *al*., 2016), this time on human cells, shows that exposure to nicotine-containing and nicotine-free e-cigarette vapour alters the epithelial cells in the mouth and lungs. The DNA of the exposed cells was damaged and the cells tested had greater rates of apoptosis and necrosis than the controls.

These pioneering studies merit attention, but also prudence. Although they certainly demonstrate the health risks of e-cigarette vapour, they do not, for the time being, enable a comparison of the excess risks of illness and mortality incurred by tobacco consumption with the potential ones inherent in e-cigarette vapour. As knowledge currently stands, e-cigarette use is still a tool for reducing the risks and harm caused by smoking, even if risks of other illnesses can arise through e-cigarette use, whether or not nicotine is present. The areas of research opened up by these various studies will ultimately enable a comparison of the levels of health risk associated with smoking with those of e-cigarette vapour.

[10] More or less similar levels of diacetyl are detected in cigarette smoke: Fujioka & Shibamoto (2006) find between 300 and 430 µg/cigarette.

[11] In this instance, the microwave popcorn industry in which the butter flavouring is composed of the three chemicals cited.

5.3. Of nicotine initiation

The issue of e-cigarettes inciting people to experiment with nicotine, with the potential of then progressing to tobacco, is an important but delicate one. It is based on the implicit hypothesis of a gateway effect in which e-cigarettes would tempt individuals, young people in particular, to take up traditional and harmful nicotine-based products. This theoretical model (Kandel, 1975) is not tailored to the electronic cigarette-tobacco route, however. The model is based above all on the idea that experience of one addictive and harmful molecule for our health leads to a stage-by-stage risk-taking sequence. The classic example is that of cannabis use which would pave the way for the user to take up cocaine and other drugs that are known to be harmful (Bell et *al*., 2014). This does not apply here as the question concerning e-cigarettes involves asking whether people progress from one nicotine consumption method to another, admittedly more harmful method, but one which retains the properties of the initial additive molecule. The questions of bioavailability and pharmacokinetics in the case of e-cigarettes, traditional cigarettes and nicotine replacement therapies are of paramount importance. As such, unlike nicotine replacement therapies, e-cigarettes deliver comparable, perhaps higher, levels of nicotine than traditional cigarettes, with similar systemic retention. The addictive potential of e-cigarettes is therefore high (St Helen et *al*., 2015).

We do not have sufficient experience or data to conclude on this gateway phenomenon, even if studies on snuff or snus[12] show that using forms of smokeless nicotine can lead to tobacco smoking (Haddock et *al*., 2001, Lund & Scheffels, 2014) and some research highlights a link between e-cigarette use and an intention to smoke tobacco (Bunnell et *al*., 2014). According to the findings of three longitudinal studies among teenagers or young adults, experimentation with e-cigarettes makes it more likely that conventional cigarettes will be tried within one year. All three of these studies revealed a significant association in non-smokers between claiming to have tried e-cigarettes and claiming, after one year, to have tried at least one combustible tobacco product. The strength of this association ranged from 2.73 [2.00-3.73] to 8.3 [1.2-58.6] (Leventhal et *al*., 2015; Primack et *al*., 2015; Gmel et *al*., 2016). Other explanatory factors have been highlighted by these studies, especially smoking by parents or peers, which lessens the role of e-cigarettes.

The question as it stands has not been phrased in the right way. E-cigarettes would be unsafe from a public health point of view from the moment they paved the way to nicotine initiation and smoking in populations who would not have started to consume nicotine if e-cigarettes had not existed. In other words, the moment nicotine, followed by smoking, initiation, takes place *via* e-cigarettes in populations who would never have smoked tobacco, e-cigarettes become harmful for public health. On the other hand, if nicotine and then smoking initiation takes place in populations who would have smoked even if e-cigarettes had not existed, this method of nicotine delivery becomes beneficial because it delays uptake of smoking and, as a consequence, exposure to carcinogens. Knowledge about the profiles of individuals who pick up nicotine consumption as a result of using e-cigarettes is thus crucial to assess the risk-benefit ratio of this nicotine delivery tool. To date, no study provides a formal response to this question.

5.4. Of smoking seeming normal again

The risk of e-cigarettes renormalising smoking is a thorny issue since the potential reasons for such a renormalisation are subtle. They are to be sought out in the beliefs and perceptions that different consumer groups have of e-cigarettes – perceptions which are partly formed through exposure to particularly effective and targeted marketing practised by this new industry. As a result, the regulations in force governing the e-cigarette industry's strategies are a key aspect to consider in this potential renormalisation of smoking.

[12] Snuff is powdered tobacco that is sniffed; snus is powdered tobacco that is placed between the gum and lip.

Regarding the beliefs and perceptions of various consumer groups, the few studies conducted on the question show that e-cigarettes are categorically not perceived as a smoking cessation tool by teenagers (Sanders-Jackson et *al*., 2015; Roditis et *al*., 2015), unlike among adult populations. In all consumer groups, it does come across as less harmful than tobacco however, limiting the risks of cancer developing for example (Anand et *al*., 2015; Lippert 2015; Pepper et *al*., 2015). Smokers who have not managed to give up by using e-cigarettes rate them as more likely to damage health than other groups do (Harrel et *al*., 2015). Even if caution is called for given the dearth of scientific research on these questions of perception, it would appear that e-cigarettes are considered separate from smoking and smoking cessation "medication"; they could represent a new, lower-risk category of nicotine delivery among young people. In this respect, and for the same reasons as on the subject of nicotine initiation, it is still too soon to be able to confirm whether or not public health concerns regarding these perceptions are unfounded.

What is more pressing, again given the lack of scientific studies, is the impact of exposure to e-cigarette advertising on different categories of individuals. Indeed, Maloney & Cappella (2016) show that, following such exposure, on the one hand smokers feel an increased urge to smoke and, on the other, former smokers feel less motivated to continue their abstinence efforts. Even if intermittent smokers claim that advertising does not have any impact on their intentions or urges, it would appear that marketing by the e-cigarette industry serves as a cue to smoke in smokers and triggers regret in former smokers – sources of new beliefs: the former tell themselves that since there is now an effective smoking cessation method, their current tobacco consumption is justified, and this in turn delays their attempts to quit; the latter feel regret about their past smoking habits, telling themselves that they could have benefited from this innovation.

Exposure to perfectly orchestrated marketing would therefore represent a powerful vector for the potential renormalisation of smoking. Indeed, the wide range of tastes and designs forms a new tool likely to appeal to all population groups concerned, by appealing to their identity and perceptions as a smoker, which are the main tools of identification and therefore of normalisation. Put another way, what needs addressing are the questions concerning advertising and consumption in places designed for collective occupation – since the first marketing argument is the number of visible consumers in addition to the cigarette as a communication medium. This is not easy to do though because of the complex legal status of this new nicotine delivery method.

6. The legal status of e-cigarettes

In theory, e-cigarettes can be categorised in several ways.

E-cigarettes and their refills are, first and foremost, likely to be categorised as medicine when they present one of the following criteria:

- they claim to help with smoking cessation. Accordingly, pursuant to Article L. 5121-2 of the French Public Health Code, the mere presentation of e-cigarettes as devices that suppress smoking desire or reduce smoking addiction is enough to qualify them and their refills as medicine (or health products) and therefore to subject them to the strict regulations governing medicines;
- the amount of nicotine contained in the cartridge is more than or equal to 10 mg;
- the "e-liquid" refill solution has a nicotine strength of more than or equal to 20 mg/ml.

However, to date no e-cigarettes have been granted marketing authorisation as a medicine (this is an administrative authorisation which attaches conditions to the marketing of medicines).

The French National Healthcare Products and Medicines Safety Agency (ANSM) states that the electronic device making up the cigarette meets the definition of a medical device and, on these grounds, must obtain CE marking.

If e-cigarettes and their refills cannot be described as medicine when they do not present one of the aforementioned alternative criteria, then neither can they be compared to a tobacco product[13], as attested incidentally by the legal action (CA Paris, 24 June 2014, RG n°13/19019; Cass., Crim., 26 November 2014, n°14-81888).

This means that they are not subject to the regulations applicable to such products, and today are therefore classified as consumer products. And yet such products must "meet the general safety requirement in accordance with the provisions of the French Consumer Code" (ANSM website). As such, refill solutions are, for example, subject to the provisions of Regulation (EC) No 1272/2008, known as the CLP Regulation, or the French Order of 9 November 2004 on classifying, labelling and packaging hazardous mixtures (Survey by the French General Directorate for Competition, Consumer Affairs and Fraud Control [DGCCRF] 2014).

There is nevertheless the possibility of e-cigarettes being considered as "special" consumer products, for, since the French Law No. 2014-344 of 17 March 2014 on consumer affairs (French *Official Journal* of 18 March 2014), sales or free giveaways have been banned in tobacconists and all public places or shops, to young people under 18 years of age, of electronic vaping devices or their associated refill containers[14]. Furthermore, since the French Law No. 2016-41 of 26 January 2016 for modernising the French health service (French *Official Journal* of 27 January 2016) was adopted, on the one hand direct or indirect advertising or propaganda of electronic vaping devices and their associated refill containers has been banned (Article 23)[15]; and, on the other, vaping has been banned in some places (Article 28), namely schools and venues designed to welcome, train and accommodate minors, enclosed public transport means and enclosed and covered workplaces for collective occupation[16].

Since the adoption of Directive 2014/40/EU of the European Parliament and of the Council of 3 April 2014 on the approximation of the laws, regulations and administrative provisions of the Member States concerning the manufacture, presentation and sale of tobacco and related products and repealing Directive 2001/37/EC, which must be transposed into French law by 20 May 2016 as part of a ruling whose authorisation is stipulated in Article 216 of the French Law of 26 January 2016, e-cigarettes and refill containers have more precisely been qualified as "related" tobacco products, i.e. consumer products subject to an additional *ad hoc* regulation (stipulated in Article 20 of the Directive[17]). This Directive does not cover e-cigarettes or refill containers that contain nicotine, however[18]. Moreover, it does not set out to regulate e-cigarettes or refill containers that would be qualified as medicine or medical devices (recital 36 of the Directive).

[13] The fact that specific regulations on e-cigarettes are provided for in Directive 2014/40/EU of 3 April 2014 on the approximation of the laws, regulations and administrative provisions of the Member States concerning the manufacture, presentation and sale of tobacco and related products and repealing Directive 2001/37/EC, nevertheless sows some confusion.

[14] Article L. 3511-2-1 of the French Public Health Code.

[15] It being specified that this provision will come into force on 20 May 2016. Previously, circular no. DGS/MC2/2014/273 dated 25 September 2014 governed the advertising of electronic vaping devices.

[16] It being specified that a French Council of State decree will set forth the conditions under which this Article is to be applied.

[17] Article 20 of the Directive in particular provides for: the notification by manufacturers and importers of electronic cigarettes and refill containers to the competent authorities of any such products which they intend to place on the market, special rules on the nicotine content of the e-liquid, special rules concerning the outer packaging and unit packets of electronic cigarettes and refill containers, special rules concerning advertising, monitoring by the Member States of market developments concerning electronic cigarettes and refill containers, including any evidence that their use is a gateway to nicotine addiction and ultimately traditional tobacco consumption among young people and non-smokers, the collection of information about all of the suspected adverse effects, etc.

[18] Indeed, the Directive defines an e-cigarette as "a product that can be used for consumption of nicotine-containing vapour via a mouth piece, or any component of that product, including a cartridge, a tank and the device without cartridge or tank. Electronic cigarettes can be disposable or refillable by means of a refill container and a tank, or rechargeable with single use cartridges" (Article 2, Para. 16) and a refill container as "a receptacle that contains a nicotine-containing liquid, which can be used to refill an electronic cigarette" (Article 2, Para. 17).

7. The stakeholders' viewpoints[19]

It is not easy rationalising and making sense of the heated debates and fierce stances adopted over e-cigarettes to try and pin down the general interest. As we have already highlighted, scientific evidence is lacking as yet to be able to cast all doubts about its merits aside. In light of this, the HCSP decided to interview stakeholders in the field, smoking cessation and risk reduction professionals, users, tobacco control associations, manufacturers, the institutions concerned and, through these interviews, make an attempt at identifying points of consensus, points of tension and, finally, questions remaining over e-cigarettes.

E-cigarettes have certainly become part of the range of smoking cessation tools that healthcare professionals and risk reduction professionals use alike. Their perceptions of the efficacy of e-cigarettes are very positive, whether in terms of smoking cessation or risk reduction. Particularly on the subject of quitting smoking and relapses or relapse intentions, the professionals insist on the necessary support, and on the fact that e-cigarettes are only one strategy among others that need to be given a go, coupled, if necessary, with other cessation techniques or replacement therapies, or even, sometimes, which need stopping. The experiences shared are evidently individual, in the same way as a patient's treatment is. For their part, users themselves have seized hold of all this and readily share their support for e-cigarettes as a clear way out of smoking. They see e-cigarettes as a way of quitting smoking, but at the same time, freeing themselves from their nicotine dependence does not appear to be one of their concerns.

Professional and individual practices are completely at odds with the main points highlighted in the scientific literature at present: with regard to the former, e-cigarettes are reported to be effective, alone or in combination with the tools already listed, as a way out of smoking.

When the risk of nicotine initiation and a potential "gateway" effect is brought up, everyone agrees on the need to protect young people from the risk of starting smoking. The fact remains that the possibility of e-cigarettes pushing back the age at which the first cigarette is smoked is under discussion and underscored, even if a consensus seems to be forming on the value of upholding the sales ban to minors. Everyone also stresses the need to ensure better compliance with the ban on selling tobacco to minors.

A certain number of stakeholders also agree on the merits of separating out e-cigarette markets and consumer groups with, as the French National Academy of Medicine has already suggested (*Académie nationale de médecine*, 2015), the creation of an "e-cigarette medicine". There would be twofold value in the latter, for it would make it possible to draw a distinction, on the one hand, between consumer groups looking to enrol in a complete nicotine cessation programme, and other consumer groups; and, on the other, between markets, with the tobacco and e-cigarette industries on one side and the pharmaceuticals industry on the other. Indeed, it appears unthinkable to have a medicalised e-cigarette manufactured by the tobacco industry, which could then be reimbursed and sold through community pharmacies.

To conclude on the points of consensus, not lumping tobacco and e-cigarettes together under the same category is a necessity on which everyone agrees. Although the e-cigarette market requires regulation and adjustments, tobacco control takes priority. We need to remember who the enemy is here.

It is vital that one does not act as a route into the other, and the bones of contention concern the renormalisation of smoking. The belief that e-cigarettes are an effective tool in helping people to quit smoking and a tool for reducing the risks of smoking paves the way for their advertisement. Whereas the advertising ban in favour of e-cigarettes is now officially recognised[20], some object to

[19] The list of people interviewed and the associations or institutions to which they belong is presented in Appendix A to this opinion.

[20] Article L.3511-3 of the French Public Health Code, amended by the law for modernising the French health service. Came into force on 20 May 2016.

it, claiming that information about an existing way out of smoking, or a tool for reducing health risks should, on the contrary, be shouted from the rooftops as it were. Other people acknowledge that it is not about advertising at the end of the day here, but information: the general public and all healthcare professionals should be told about the existence and expected effects of this tool. Between advertising for e-cigarettes, which could renormalise smoking because of the marketing codes used, and information to be dispensed to promote a cessation and risk reduction tool, the messages to be delivered appear subtle and, as such, how they should be given out in practice strikes as complicated.

Since the regulatory provisions decided on by the French Council of State are due to be incorporated in the law for modernising the French health service shortly, the question of banning the use of e-cigarettes in all public places has been raised. Here again, people are divided: some believe that this ban will prompt e-cigarette users to take up smoking (again) – since they will have to join smokers in designated areas – and that e-cigarettes should thus have been allowed everywhere (except in schools and enclosed workplaces and transport premises or at the very least for young people as the law stipulates), some call for the solution prior to the law to be recognised, whereby the issue could be settled on a case-by-case basis (primarily in the workplace) through negotiations and discussion, and others set great store by the need not to derogate from a principle that was difficult to obtain – that of no smoking in public places – and, as such, not to create a loophole for exceptions that would ultimately be difficult to control.

Questions mainly concern the tobacco industry's involvement in the e-cigarette market. Stakeholders raise two specific points in this instance. The first yet again bears on scientific evidence. How can the independence and impartiality of certain scientific studies be assured when some publications appear to be biased or, at the very least, subject to caution, in their methodology and their findings? Indeed, the tobacco industry has wielded influence over science for long enough now that this no longer in question (see Brandt, 2012). We could also point out that conflicts of interest have been detected in certain publications extolling the merits of e-cigarettes (*The Lancet*, 2015).

The second point is also tied in with the tobacco industry's influence and lobbying ability. Some stakeholders question certain guidelines given in Directive 2014/40/EU of the European Parliament and of the Council, especially concerning the future technical characteristics that e-cigarettes and e-liquid refills will have to incorporate. According to these stakeholders, the requirement to abide by these technical characteristics can only work in the favour of the tobacco industry whose financial and technical clout is greater than e-cigarette manufacturers' - and would give them a probable edge on the market.

To conclude, there is no doubt that the disunity existing at present between toxicology, epidemiology and practices or, in other words, between the contradictory findings in the scientific literature and the field observations of healthcare professionals and users, puts HCSP in a very difficult position. How can we possibly draw up "evidence-based" public health recommendations when all the feedback from the field appears to be consistent in contradicting or, at the very least, putting in perspective the scientific findings? How can we draw up recommendations based on evidence which, itself, depends on a different time dimension to individual practices?

Fully aware of these wide-ranging opinions and the probable criticism over bias created by the necessarily summarised way in which these interviews have been reported, the HCSP recalls that its missions lead it to focus its thinking solely on the public health requirement.

8. International experiences on regulating electronic cigarettes

The HCSP has studied international experiences aimed at regulating e-cigarettes and refill containers.[21] There are two main findings. The first is the desire to regulate e-cigarettes by using an existing framework in the national legislation, whether this concern tobacco products, food or protection of young people. The second is that these regulation intentions seem to be on hold until evidence comes to light enabling the regulatory status of e-cigarettes and refill containers to change and be clarified at any time.

The HCSP is reviewing the risks and benefits in the use of electronic cigarettes by the general population

1. Users and healthcare professionals alike have been quick to adopt e-cigarettes as a tool for reducing the risks of smoking and a smoking cessation aid. But the gaps and contradictions in the scientific literature, or at least the double-edged interpretations that can be made of it, call for close attention to be paid to empirical practice. A sizeable proportion of the population nonetheless uses e-cigarettes for recreation.

1.1. In terms of smoking cessation, we have, on the one hand, the healthcare professionals' glowing praise for e-cigarettes and, on the other, scientific findings – including from a recent meta-analysis published in The *Lancet Respiratory Medicine*, which suggests a negative association between e-cigarette use and smoking cessation (Kalkhoran & Glantz, 2016). At the end of the day however, robust studies are few and far between: only two randomised trials (mentioned above) have been published to date, and the literature reviews mainly list longitudinal observational studies that do not enable causal links to be established. Based on the evidence currently available, the HCSP is unable to make any clear-cut decisions regarding a recommendation for considering e-cigarettes as a cessation aid, or even as a medical cessation aid, in the general population. That said, it is vital that studies of the targeted randomised type be performed on smokers who are motivated to quit. We might well expect favourable effects, but until such evidence has been furnished, e-cigarettes as a cessation aid must be left to the discretion of the professionals providing guidance to smokers who are trying to quit, and after a clinical assessment on a case-by-case basis.

1.2. With respect to risk reduction, it is very reasonable to admit that a smoker who switches to exclusive use of e-cigarettes will see his or her likelihood of developing diseases as a result of his or her tobacco consumption fall – even if e-cigarettes containing nicotine pose no small specific risk in terms of cardiovascular health because of the nicotine pharmocokinetics of e-cigarettes (St Helen et *al*., 2015). However, for smokers who also use e-cigarettes, the debate continues. It would seem that this category of users cuts down on their ordinary tobacco consumption thanks to e-cigarette use. We might also quite justifiably wonder whether, for this consumer group, e-cigarettes do not represent a hindrance to a future intention to completely quit smoking. In this regard, there is no convincing evidence to date which justifies updating the HCSP's previous opinion. It can simply be said that rigorous follow-up studies must be encouraged to obtain more robust data and to shed light on the health benefit of cutting down on the amounts of tobacco smoked.

1.3. As for certain specific consumer groups – and even if passive vaping is reported to be zero- or at least only low-risk – the HCSP is still against authorising e-cigarette use in public places (see above). In young people who neither smoke nor use e-cigarettes, the evidence available does not provide much data for determining whether e-cigarettes

[21] An international benchmark of e-cigarette regulations drawn up by the Inpes can be found in Appendix B to this opinion.

encourage or prevent tobacco consumption. The HCSP therefore calls for such studies to be encouraged (i-Share cohort and other research to be developed) and above all reiterates its recommendation that sales to minors remain banned. Pregnancy is certainly an ideal time for a future mum who is also a smoker to quit smoking for good; we might well fear that using e-cigarettes containing nicotine during pregnancy dashes any hopes of this, since taking up smoking again post-pregnancy can become more likely if there is continued nicotine exposure during pregnancy.[22] On the other hand, it can also be argued that e-cigarette use by pregnant women is preferable to smoking (the risk of e-cigarettes containing nicotine for the unborn child would need assessing). For the most vulnerable consumer groups, on the one hand for whom there is a greater tendency to smoke and, on the other, who need more help to give up smoking, thought must be given to specific measures. On all these questions, robust scientific research in the fields of epidemiology, humanities and social sciences needs to be conducted for the HAS to issue recommendations.[23]

The HCSP is thus setting out the conditions for a review in favour of electronic cigarettes.

2. At the same time as keeping the continuation and reinforcement of tobacco control as the number one public health priority, the use and marketing of e-cigarettes must be stringently regulated to avoid tobacco consumption being renormalised and an additional risk of nicotine initiation. These risks can be limited by:

2.1. Banning the use of e-cigarettes in public places as stipulated in Article L.3511-7-1, even if there is zero- or extremely low risk for third parties. Note that this ban could be extended in the same way as smoking bans[24]. The HCSP nevertheless acknowledges that e-cigarettes are not comparable to tobacco and that this recommendation may imply the contrary in the eyes of the general population. That said, tobacco control continues to take precedence, and it is therefore crucial that legislation on the subject – already poorly applied – be encouraged.

2.2. Setting up a blanket advertising ban in favour of e-cigarettes and e-liquids in the same way as the provisions bearing on tobacco and as provided for by Article 3511-3 of the law for modernising the French health service. With the marketing strategies of the e-cigarette industry currently heading towards general public communication based on the enjoyment factor and the increasing range of flavours and brands, fears of heightened but unjustified appeal among non-smokers are not unfounded. This may also lead to indirect communication in favour of tobacco products.

2.3. Transposing Directive 2014/40/EU of the European Parliament and of the Council with the particular aim of clarifying the regulations. E-cigarettes benefit from a brand new category and, as such, should be subject to equally brand new regulations. We need to remember that e-cigarettes are not a tobacco product, and may be classified as a medicine. It is a "tobacco-related product", i.e. a consumer product governed by *ad hoc* regulations except, if our interpretation of the Directive is correct, in the case of e-cigarettes whose e-liquids do not contain nicotine.

3. E-cigarettes and e-liquids must present a sufficient level of quality for consumers. Stricter standards, labelling and quality controls should better guarantee consumer safety.[25]

[22] Once again because of the nicotine pharmacokinetics of e-cigarettes in comparison with transdermal patches for example.

[23] These are not part of the HCSP's remit.

[24] Article L.3511-7 of the French Public Health Code stipulates that it is "an offence to smoke in places designed for collective occupation", which Decree No. 2015-768 of 29 June 2015 applies to "all enclosed and covered premises open to the public".

[25] See Article 20 of Directive 2014/40/EU in this regard.

With consumer comfort in mind, discussions must also be held on the technical constraints imposed upon e-cigarettes by Directive 2014/40/EU. E-liquids should be monitored in terms of their content and packaging to allow consumers to form an enlightened opinion about the contents of the products used.

The HCSP reiterates its recommendations of the April 2014 opinion:

4. The tools for observing the levels and methods of e-cigarette and tobacco consumption as well as the research tools bearing on these products need to be reinforced.

The HCSP calls for:

5. The competent authorities and stakeholders to promptly initiate discussions on the merits and feasibility of a medicalised e-cigarette, which is subject to prescription as part of a smoking cessation programme as well as to reimbursement on the same grounds as nicotine replacement therapies, and which is issued through community pharmacies. This medicalised e-cigarette could involve communication to the target consumer groups concerned for information purposes (healthcare professionals, risk reduction professionals and smokers), the arrangements of which will need defining.

6. Heightened responsiveness on the part of public authorities amid "technological innovations purporting a public health benefit" put forward by the market, without having first received endorsement as a medical device or medicine on the part of the competent authorities. This involves not only observing practices of users taking up these innovations with a view to improving their health, but also keeping an eye on market trends. The consequences of there being no regulations and incomplete knowledge of the risks and benefits need to be anticipated well before these innovations become available, to the extent possible.

7. The World Health Organisation to convene an expert panel with a view to drawing up recommendations on e-cigarettes. These recommendations could be included in a future version of the Framework Convention on Tobacco Control, thus providing greater international regulatory insight into this question.

Opinion drafted by a group of experts, some of whom are members of the HCSP, around the Special Committee on Health Prevention, Education and Promotion.
Opinion validated by the Chairman of the French High Council for Public Health

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Appendix A. List of people interviewed (in alphabetical order of the institution or association name)

Académie nationale de médecine
Prof. Gérard Dubois
Agence nationale de sécurité du médicament et des produits de santé (ANSM)
Nathalie Richard
Association indépendante des utilisateurs de cigarette électronique (AIDUCE)
Claude Bamberger, Brice Lepoutre, Philippe Presle
Comité d'éducation sanitaire et sociale de la pharmacie française (CESPHARM)
Prof. François Chast, Fabienne Blanchet
Comité national contre le tabagisme (CNCT)
Emmanuelle Béguinot
Droit des non-fumeurs (DNF)
Stephen Lequet
Direction générale de la concurrence, de la consommation et de la répression des fraudes (DGCCRF)
Axel Thonier
École des hautes études en santé publique (EHESP)
Prof. Karine Gallopel-Morvan
Fédération française d'addictologie (FFA)
Dr Alain Morel, Caroline Prat
Fédération française de la vape (FIVAPE)
Olivier Martzel
Jean Moiroud
Charly Pairaud
Rémi Parola
Fontem Ventures
Dr Grant O'Connell
Institut national de la consommation (INC)
Christian De Thuin, Claire Wallaert
Le Monde
Pascale Santi
Office français du tabagisme (OFT)
Prof. Bertrand Dautzenberg
Public Health England (PHE)
Duncan Selbie, Martin Dockrell, Kevin Fenton, Gemma Lien
Réseau de prévention des addictions (RESPADD)
Dr Anne Borgne
Société francophone de tabacologie (SFT)
Dr. Marion Adler
Dr Ivan Berlin

Appendix B. International benchmark of the regulations concerning e-cigarettes

Overview of legislative measures in Australia, the UK, the Netherlands, Québec, Germany, Switzerland and the US. Inpes, February 2016

Country	Measures
Australia	• Legislation covering e-cigarettes in Australia is complex and varies between jurisdictions. Commonwealth law overrides state and territory law when there is any inconsistency. There is a panel of measures aimed at governing therapeutic goods, poisons (which include nicotine) and tobacco. • In all Australian states and territories, it is an offence to manufacture or sell nicotine without specific authorisation. • Therapeutic goods may only be imported and sold if authorised by the Therapeutic Goods Administration (TGA), which must assess the safety, quality and efficacy of the good. The TGA has not yet ruled on e-cigarettes containing nicotine. ○ The commercial importation and sale of e-cigarettes that do not contain nicotine but which make therapeutic claims must obtain authorisation from the TGA. No authorisation has been granted by the TGA to date. ○ If the good does not make any therapeutic claims, it may be sold on the market without requiring authorisation from the TGA. The laws on poisons and customs measures may apply depending on the good's contents. ○ The Federal Department of Health allows consumers to import nicotine for putting in their e-cigarettes provided that the importer holds a prescription from an Australian registered medical practitioner and only imports 3 months' supply at any one time (the total quantity imported in 12 months cannot exceed 15 months' supply).
Germany	• The Protection of Young Persons Act bans the sale of all tobacco products to children and adolescents under 18 years of age in public places and the latter are not permitted to smoke in such places. • For the time being there is no legal age limit for using e-cigarettes. That said, the Federal Minister of Food and Agriculture, Christian Schmidt, and the Federal Minister for Family Affairs, Senior Citizens, Women and Youth, Manuela Schwesig, held a press conference on 23 April 2015 during which they indicated that e-cigarettes with or without nicotine were not risk-free. They considered it preferable to regulate their sales, which would protect children and adolescents from such potential dangers as progressing from e-cigarettes to tobacco-containing cigarettes.
Switzerland	• E-cigarettes fall within the scope of the Foodstuffs Act, and there are no restrictions covering the sale of nicotine-free ones. • E-cigarettes that do contain nicotine cannot be sold in Switzerland, but importation of refill cartridges for personal use, limited to 150 ml of refill liquid containing nicotine, is authorised. • Nicotine-free and nicotine-containing e-cigarettes do not fall within the scope of the Federal Act on Protection Against Passive Smoking; they can therefore be used in public places. • The Tobacco Act currently being drafted and which is scheduled to come into force in 2018 should place e-cigarettes that contain nicotine, cartridges and refills in the same category as tobacco products. These may therefore be sold in the same way as other tobacco products, in the 16,000 sales outlets listed. These products will not fall within the scope of the Federal Act on Protection Against Passive Smoking, but each canton will be free to issue provisions in this respect.

UK	• In the UK, in August 2015 a group of experts appointed by Public Health England (PHE) presented a report which concluded that e-cigarettes are significantly less harmful to health than tobacco and have the potential to help smokers quit smoking (https://www.gov.uk/government/news/e-cigarettes-around-95-less-harmful-than-tobacco-estimates-landmark-review). This report sparked a great deal of debate in the UK and worldwide. • On 1 October 2015, it became illegal to sell e-cigarettes to under 18s and, for young people under 18 years of age, to buy e-cigarettes and tobacco products. • The Committee of Advertising Practice, an inter-professional self-regulation body, admits that its members advertise in favour of e-cigarettes, as long as this contains nothing which shows the use of a tobacco product in a positive light, does not encourage non-smokers to use e-cigarettes, is not likely to appeal to young people, does not contain health or medicinal claims unless the product is authorised for those purposes, and does not claim that e-cigarettes are less dangerous than tobacco products (which seems to be at odds with the PHE's opinion). • Private companies can choose to prohibit vaping, as "Transport for London" has done.
Netherlands	• The regulations concerning e-cigarettes came into force on 1 February 2015 through a temporary decree, which will apply until the Tobacco Act is published, scheduled for mid 2016. This Act provides for the ban on advertising and sales of e-cigarettes to minors (under 18s), on the grounds of their being harmful. • The temporary decree of 1 February 2015 sets out to regulate e-cigarettes, particularly the maximum volume of refillable reservoirs (set at 2 ml), child-proof packaging, labelling, including a compulsory package leaflet on possible harmful effects and advertising requirements, including compulsory health warnings, e.g. "This product contains nicotine, which is highly addictive". "Non-smokers are advised not to use it". E-cigarettes must not be advertised as an aid to quit smoking.
Québec	• In Québec, Bill 44 concerning tobacco control, adopted on 26 November 2015, subjects e-cigarettes with or without nicotine to the same regulations as tobacco, which implies banning their sale to minors, restricting their advertising and banning their use where smoking is also prohibited (bar and restaurant patios, outdoor playgrounds, common areas of multi-unit dwellings , workplaces, public transport, schools and so on). • E-cigarettes with or without nicotine may not be presented on displays in view of the public in points of sale, with the exception of specialist outlets, which must deny access to minors. The products may not be tried on-site, which was a common practice before the bill. It is an offence to rent out e-cigarettes. • E-liquid flavours are not banned, but the Minister has provided for the possibility of banning them via regulations in the bill. • During consultations for the draft bill, the Québec Public Health Expertise and Reference Centre (*Institut national de santé publique du Québec*/INSPQ) along with other health organisations called for assurances that manufacturing standards would be drawn up to guarantee the safety and quality of the device, its components and liquids.

United States[26]

- In the US, the Food and Drug Administration (FDA) has highlighted the lack of data on e-cigarettes, especially on:
  - the potential risks of e-cigarettes when used as intended,
  - how much nicotine or other potentially harmful chemicals are being inhaled during use,
  - whether there are any benefits associated with using these products,
  - whether e-cigarettes may lead young people to try other tobacco products.
- The FDA Center for Tobacco Products regulates cigarettes, cigarette tobacco, roll-your-own tobacco and smokeless tobacco.
- FDA has recommended broadening this centre's remit to also include assessment of products which could be defined as tobacco products, such as e-cigarettes. This measure would allow for more effective governance of e-cigarettes, since makers of newly deemed tobacco products would, among other requirements:
  - Register with FDA and report product and ingredient listings,
  - Only market new tobacco products after FDA review,
  - Not distribute free samples,
  - Only make claims of the reduced risk associated with e-cigarettes if FDA confirms that scientific evidence supports the claim,

  The measure would also bring about:
  - minimum age and identification restrictions to prevent sales to underage youth,
  - Requirements to include health warnings,
  - Prohibition of vending machine sales.
- Many states have already introduced a set of rules for governing the sales and use of e-cigarettes, however. These come in five different forms:
  - E-cigarettes are defined as a tobacco product in the state laws: this is the case in Colorado, Hawaii, Minnesota, North Carolina, South Dakota, Utah and Wyoming.
  - Introducing taxes: Most states do not apply taxes on e-cigarettes, apart from Minnesota (tobacco tax is 95% of the wholesale cost of any product containing or derived from tobacco, including e-cigarettes) and North Carolina (vaping products are taxed at 5 cents per millilitre of consumable product).
  - Product packaging: many states apply restrictions or special conditions on e-cigarette packaging. All of the measures are aimed at protecting children, particularly the requirement to package e-cigarettes in child-proof packaging (Indiana, Minnesota, Wyoming), and the requirement to sell e-cigarettes in original factory-sealed packaging (New Mexico).
  - Sales restrictions, particularly to minors: Many states have regulated young people's access to e-cigarettes, such as Alabama and Alaska (prohibit their sale to anyone under 19), Arizona, Maryland, New Hampshire (prohibit the sale of vaping products to minors and prohibit minors from buying and possessing vaping products), Arkansas (prohibits the sale of e-cigarettes to anyone under 18 as well as advertising in sales outlets that are accessible to minors), Colorado, Tennessee, California, Connecticut,

[26] The legal age in the US is 18 in almost all states and territories, 19 in Nebraska and Alabama and 21 in Mississippi. It is 21 in all states for buying and consuming alcohol.

Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Minnesota, Mississippi, Montana, Nebraska, New Mexico, Virginia and West Virginia, Wisconsin (prohibit the sale of e-cigarettes to anyone under 18 and prohibit minors from buying and possessing nicotine-containing products or vaping products for Colorado and Tennessee);

- Restrictions bearing on no-smoking zones, such as in Idaho (prohibits the sale of e-cigarettes to minors, and vending machines selling e-cigarettes may only be installed in locations authorised to distribute tobacco), New York (e-cigarette or liquid nicotine sales are banned to anyone under 18, and vending machines selling e-cigarettes must be under round-the-clock surveillance by their owners), or North Carolina (prohibits sales to anyone under 18; vending machines selling e-cigarettes must be installed in locations that are not accessible to minors where they will be under constant surveillance by their owner; online sales of e-cigarettes are allowed provided that an independent third-party service verifies the purchaser's age).

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