



E-cigarettes and Electronic Nicotine Delivery Systems

Electronic cigarettes or electronic nicotine delivery systems (ENDS) are devices that vaporize and deliver a chemical mixture, sometimes called e-juice, to the lungs of the user. This mixture usually contains nicotine, propylene glycol and other chemicals, although some products claim to contain no nicotine. Each device contains an electronic vaporization system, batteries, electronic controls and cartridges of the liquid that is vaporized. Most devices look like tobacco products (e.g. cigarettes, cigars, cigarillos, pipes, hookahs, water pipes). Some look like memory sticks and pens.

In Canada, under the *Food and Drugs Act*, it's illegal to import, market, or sell e-cigarettes that contain nicotine unless they are approved as a new drug by Health Canada. To date, no e-cigarette manufacturer's product has been submitted for, or received, market authorization from Health Canada. It is also illegal to sell e-cigarettes that make a health claim, such as e-cigarettes are a smoking cessation (stop smoking) device, or to sell e-cigarette nicotine cartridges or liquid. Due to enforcement gaps, nicotine liquid or cartridges can be purchased online and in some stores.

In March 2009, Health Canada issued an *Advisory to Canadians* to not use e-cigarettes as these products may pose health risks and have not been fully evaluated for safety, quality and efficacy by Health Canada. This advisory has not been revised as of August 2014.

Because e-cigarettes and the liquid they vapourize (with or without nicotine) have not gone through the product safety testing processes required for approval by Health Canada, consumers don't know if what they are buying is safe to use, nor how likely it is to help them reduce or stop smoking tobacco products.

Nova Scotians are now using e-cigarettes in hospitals, schools, public places and workplaces where smoking is prohibited under the Smoke-Free Places Act. This undermines the smoking bans that have helped reduce the proportion of Nova Scotians who use tobacco products. The second hand vapour from the electronic devices may put other people's health at risk. The Minister of Health and Wellness announced the Government intends to introduce legislation to prohibit e-cigarette use indoors where smoking is currently prohibited.

With regard to legislation to protect the public, the World Health Organization, *Electronic Nicotine Delivery Systems Report* (July 2014)¹ states:

- (a) Smoke-free policies are designed not only to protect non-smokers from second-hand smoke, but also to provide incentives to quit smoking and to denormalize smoking as adolescents are particularly vulnerable to visual cues and social norms.
- (b) The use of ENDS in places where smoking is not allowed
 - (i) increases the exposure to exhaled aerosol toxicants of potential harm to bystanders,
 - (ii) reduces quitting incentives, and
 - (iii) may conflict with the smoking denormalizing effect.

When designing a regulatory strategy for ENDS, governments should bear in mind the following general regulatory objectives:

- (a) impede ENDS promotion to and uptake by non-smokers, pregnant women and youth;
- (b) minimize potential health risks to ENDS users and non-users;
- (c) prohibit unproven health claims from being made about ENDS; and

(d) protect existing tobacco-control efforts from commercial and other vested interests of the tobacco industry.

The Report specifically recommends, “ban ENDS solutions with fruit, candy-like and alcohol-drinks flavours until empirical evidence shows that they are not attractive to minors.”

Public health and tobacco control practitioners around the world are concerned about the rapid growth of the marketing, awareness and use of electronic cigarettes and other electronic nicotine delivery systems in Nova Scotia, Canada and globally.

What the latest scientific reviewsⁱⁱ tell us about e-cigarettes in 2014

The American Heart Association 2014, *E-cigarettes: A scientific review* states, “health claims and claims of efficacy for quitting smoking are unsupported by scientific evidence to date. To minimize the potential negative impacts on prevention and cessation, and the undermining of existing tobacco control measures, e-cigarettes use should be prohibited where tobacco use is prohibited, and the products should be subject to the same marketing restrictions as tobacco cigarettes.”ⁱⁱⁱ

The *Review* advises physicians to tell their patients, “the products are unregulated, contain toxic chemicals, and have not been proven as cessation devices, and not to use the products indoors or around children because studies show that bystanders may be exposed to nicotine and other toxins through passive exposure to the e-cigarette aerosol [vapour].”

The *Review* concludes that the “data reviewed, together with evidence of dual use [of e-cigarettes and conventional cigarettes] and youth initiation of e-cigarettes use, do not demonstrate any hypothesized harm-reducing effect” contrary to the e-cigarette companies’ marketing claims.

A major concern about e-cigarettes is their potential harm to reduce the gains made through effective tobacco control strategies to date - specifically youth initiation to nicotine addiction with e-cigarettes, dual use with cigarettes resulting in delayed or deferred quitting among teens and adults, and the renormalization of smoking behaviour. Without effective legislation to protect the public from e-cigarettes, not only will e-cigarettes not reduce the harm of tobacco use, but they might actually increase the harm by perpetuating the life of conventional cigarettes.

The *Review* makes the following policy recommendations to protect public health that are within the scope of amendments to the Smoke-Free Places Act and the Tobacco Access Act:

- Prohibit the use of e-cigarettes anywhere that use of conventional cigarettes are prohibited
- Prohibit the sale of e-cigarettes to anyone who cannot legally buy cigarettes or in any venues where sale of conventional cigarettes is prohibited
- Subject e-cigarette marketing to the same level of restrictions that apply to conventional cigarettes
- Prohibit the use of characterizing flavors in e-cigarettes, particularly candy and alcohol flavors

By 2013 major multinational tobacco companies entered the e-cigarette market

The tobacco companies address e-cigarette issues as part of their policy agenda, and as they have done since the 1980s, continue to engage in creating and supporting “smokers’ rights” groups. These seemingly independent groups interact with consumers directly for political involvement to support the tobacco company agenda. Altria and RJ Reynolds Tobacco Company maintain websites called Citizens for Tobacco Rights and Transform Tobacco. E-cigarette news and action alerts are featured on the home pages of these websites and include instructions for taking action against bills designed to include e-cigarette use in smoke-free laws. E-cigarette companies engage in similar tactics, using the same political and public relations strategies as the tobacco companies (most notably featuring organized “vapers” like the organized smokers).

They also use social media that is tightly integrated with their product marketing campaigns to press their policy agenda. These strategies were successfully deployed in Europe to convince the European Parliament to substantially weaken the proposed EU Tobacco Product Directive in October 2013.^{iv}

Consumer perceptions of the risks and benefits, and decisions to use e-cigarettes, are heavily influenced by how they are marketed. A review of 59 e-cigarette retail websites found the most popular claims were the products are healthier (95%), cheaper (93%) and cleaner (95%) than cigarettes; can be smoked anywhere (88%); can be used to circumvent smoke-free policies (71%); do not produce second-hand smoke (76%); and are modern (73%). Health claims (22%) and cessation claims (64%) were also found. The sites commonly stated that e-cigarettes produce only “harmless water vapour”. E-cigarette companies have a strong presence in social media which reinforces their marketing messages, including repeated use of celebrity endorsements.

As tobacco companies have been unable to market their products on television and radio since the 1970s, e-cigarette advertising on television and radio (as well as online and in print media) is mass marketing of an addictive product for use in a recreational manner to a new generation who have never experienced such marketing.

Awareness of e-cigarettes and trying e-cigarettes has at least doubled among teens and adults in the US and the European Union from 2008 to 2012. Population-based studies show that across countries, e-cigarettes are most commonly being used concurrently with conventional tobacco cigarettes (dual use). Consistent with marketing messages, the most common reasons given for trying e-cigarettes are for use in places where smoking is restricted, to cut down and for help quitting smoking.^v

The tobacco industry’s internal documents suggest that flavouring agents have played an important role in the industry’s targeting of children and youth, and there is a concern that they could play the same role in the uptake of ENDS in these age groups.^{vi}

Use by teens in the US doubled from 2011 to 2012 (3.3% to 6.8%). In 2012, 20% of junior high and 7% of US high school e-cigarette users reported never smoking conventional cigarettes. In Korea 15% of students in grades 7-12 who had ever used an e-cigarette also had never smoked.^{vii}

Almost one fifth (16.1%) of Canadians aged 16 to 30 years who participated in a 2012 survey reported trying e-cigarettes, with evidence of use among non-smokers. Ever use among non-smokers doubled from 2012 to 2013, from 5% to 10%. Ever use among smokers increased from 35% to 43% in the same period.

Ever use among adult smokers increased from 4% in 2010/2011 to 27% in 2013. Current use by smokers increased from 15% to 27% between 2012 and 2013. Smokers reported they were interested in trying e-cigarettes to help them quit smoking (80.4%), as a long-term replacement for cigarettes (77.8%), or to use in places where they cannot smoke (80.9%).^{viii}

Current evidence about potential health risks and health claims related to e-cigarettes

Currently the safety of these devices and the vapour they produce is not known. Their usefulness to help people stop smoking has not been adequately scientifically demonstrated.

Like cigarettes, e-cigarette particles are small enough to reach deep into the lungs and cross into the blood stream. At minimum scientific studies show that e-cigarette vapour is not merely “water vapour” as is often claimed in the marketing for these products. Tests on e-cigarettes show much lower levels of most toxicants than conventional cigarettes, but not [harmful micro] particles. The threshold for human toxicity of potential toxicants in e-cigarette vapour is not known, and the possibility of health risks to the users and those exposed passively to their emissions must be considered. The long-term biological effects are unknown at this time because e-cigarettes have not been in widespread use long enough for [scientific] assessment.^{ix}

With regard to e-cigarettes as an effective cessation (stop smoking) device, the 2014 *E-cigarettes: A scientific review* states “the evidence to date from clinical trials does not demonstrate that e-cigarettes

are efficacious ... and are not associated with successful quitting in general population-based samples of smokers.”

Where included, the levels of nicotine in the e-juice liquid and cartridges can vary greatly. The liquid can also contain candy-like flavours appealing to children and youth. If children swallow the e-juice it could cause nicotine poisoning. The US Centre for Disease Control reported calls to poison centers involving e-liquids increased from one a month in September 2010 to 215 a month in February 2014.

WATERPIPES / HOOKAH PIPES

Waterpipe/hookah use is a public health hazard, used with or without tobacco products

Herbal waterpipe/hookah products do not currently fall under federal or provincial tobacco control legislation. Therefore, the sale and use of waterpipe/hookah products are currently not restricted and youth of any age can purchase and use waterpipe/hookah products in any location.

Recently, waterpipe use has increased and research shows its smoke is at least as harmful as cigarette smoke. Flavoured water pipe tobacco products (and those that claim they do not contain tobacco) appeal to youth because they mask the harsh taste and smell of tobacco. It’s critical that the government amend its current legislation to restrict the sale of these gateway products, and prevent their use where tobacco use is currently prohibited. This will protect the health of Nova Scotians and prevent youth from starting to use harmful, addictive products.

Depending on the product and smoking pattern of the user, waterpipe use can produce significant levels of nicotine, carbon monoxide, tar and other heavy metals. A waterpipe smoker may inhale as much smoke in an one-hour session as someone who inhaled 100 or more cigarettes.^x A waterpipe can produce about 50 liters of smoke in a 45-minute smoking session (compared to 1 liter of smoke for a cigarette).^{xi} The Ontario Tobacco Research Unit reviewed current literature on the health effects of water pipe use in 2011 and concluded that waterpipe / hookah smoke is as harmful as cigarette smoke.^{xii}

A 2012 research study funded by Health Canada found that the smoke produced when herbal, tobacco-free products are burned in a waterpipe may pose a significant threat to the health of both the waterpipe smoker and those patrons and employees exposed to the smoke. Samples of herbal, tobacco-free waterpipe products were found to contain levels of toxic trace metals and cancer-causing chemicals equal to, or in excess of, those found in cigarette tobacco.

Patrons and staff of waterpipe/hookah establishments are exposed to harmful levels of secondhand smoke. Smoke emission analyses by the University of Alberta indicated that toxic byproducts produced by the combustion of ‘herbal’ shisha (does not contain tobacco), were equal or greater than those produced by tobacco shisha. The air quality assessment demonstrated that harmful microparticle levels and carbon monoxide content were significantly higher in waterpipe establishments compared to a casino where cigarette smoking was permitted.

The same study concluded, “‘Herbal’ shisha products tested contained toxic trace metals and polycyclic aromatic hydrocarbons (PAH) levels equivalent to, or in excess of, those found in cigarettes. Their mainstream and sidestream smoke emissions contained carcinogens equal to, or in excess of, smoke from tobacco products. The content of the air in the waterpipe cafés tested was potentially hazardous.”^{xiii}

Dr. Barry Finegan, principal investigator for this study stated, “There is a widespread misconception that these so-called ‘herbal’ products are somehow a healthy alternative to tobacco. Many people assume because they are flavoured and filtered through water, and do not contain nicotine, that they must be harmless. But this is not the case. The results of our study suggest that herbal, tobacco-free waterpipe products, used over the long term, have the potential to produce cancer, cardiovascular and lung disease – just like cigarettes. And for those who with heart or lung disease, even just one waterpipe session could be dangerous.”^{xiv}

There is a growing body of evidence demonstrating the significant negative health effects of waterpipe/hookah use including decreased lung function, lung cancer, respiratory illness, periodontal disease, heart disease, infectious disease, and pregnancy complications.^{xv, xvi, xvii, xviii, xix}

Flavoured waterpipe use is not a cultural tradition

The notion that water pipe smoking is only a cultural tradition is incorrect. Data indicates that young adults of *all* cultural backgrounds are at the forefront of this emerging epidemic. The use of flavoured waterpipe products increased dramatically in the mid 1990's. In 2011, 24% of young adults in Canada reported trying a water pipe. Interestingly, a growing number of countries with a predominantly Muslim population (e.g. Turkey, Lebanon and Djibouti) have banned all waterpipe/hookah smoking (including non-tobacco water pipe smoking) in workplaces and public places such as restaurants and cafes.

Many health organizations, including the World Health Organization^{xx} and the International Agency for Cancer Research recommend policy measures to ban waterpipe/hookah use in public places.

Youth Waterpipe Appeal and Use in Nova Scotia

Studies have shown that waterpipe use among youth is strongly associated with the use of tobacco (along with alcohol and other illicit drugs)^{xxi, xxii, xxiii} and that Canadian waterpipe users are primarily young adults, especially young English-speaking males who live apart from their parents and have disposable income.^{xxiv}

According to a recent national study of flavoured tobacco and youth, nearly half of all Nova Scotia tobacco users in grades 6-12 (49%) used flavoured tobacco (population estimate = 3,900) and of those who used water pipes, 28% used flavoured waterpipe products (population estimate = 500).^{xxv}

Waterpipe use at a hookah bar or restaurant is relatively affordable for youth. A typical session will cost between \$12 and \$15, which can be shared among friends.^{xxvi}

Waterpipe smoking provides an opportunity to gather with friends and socialize. The social experience can be an attractive option for youth who are too young to get into bars and nightclubs. It is common for young people to smoke waterpipe for an hour session or longer.

Enforcement Challenges

Currently, waterpipe/hookah cafes, bars and lounges are able to circumvent the NS Smoke-Free Place Act by claiming that their shisha is 'herbal' (tobacco-free) and it is 'heated', not lit.

Establishments often blend their own shisha (the product heated on the waterpipe) or use poorly labeled products. This makes it difficult for both water pipe smokers and tobacco enforcement officers to know whether or not the shisha contains tobacco.

Currently in Ontario and British Columbia, enforcement officers must obtain and test 'herbal' shisha samples to see if they contain tobacco in order to lay a charge under their smoke-free public places and workplaces legislation. The samples are sent to the Canadian Border Services Agency for testing. This is time consuming and expensive at \$2000 per sample or more. Nova Scotia does not have sufficient enforcement staff to take samples, nor the resources to have them tested.

Broadening the definitions and scope of the Smoke-Free Places Act to include the heating of 'herbal' and tobacco shisha in places where tobacco use is prohibited would eliminate the time consuming and costly need to test shisha in hookah/waterpipe bars, cafes and lounges for the presence of tobacco. This would make enforcement much easier, less time consuming and far less expensive. Prohibiting the sale of flavoured substances for use in waterpipes under the Tobacco Access Act would limit the ability of these products to attract and harm children and youth, as well as adults.

Policy and Legislation in Other Jurisdictions

August 11, 2014, the BC Provincial Court upheld in its entirety Vancouver bylaw provisions banning all water pipe smoking in public places, including restaurants, cafes, bars and patios.

The Court rejected claims that the bylaw infringed constitutional protection of freedom of religion; life, liberty and security of the person; and equality rights. The Court rejected claims that smoke from “herbal” non-tobacco water pipes was not proven to be harmful, and that Vancouver had no authority to adopt the bylaw. The Vancouver bylaw bans smoking of anything, not just tobacco, in public places.

Vancouver is one of at least 15 Canadian municipalities that have banned all water pipe smoking, including herbal non-tobacco water pipe smoking, in restaurants and bars. Alberta has also done so in recently adopted provincial legislation

The European Union recently adopted a Tobacco Products Directive. Non-tobacco (herbal) substances for smoking (notably for waterpipe/hookah smoking) are now covered by the Directive. The Directive deals with the promotion, labeling and regulation of tobacco products.

In late 2013, the 1st International Conference on Waterpipe Tobacco Smoking was held in Abu Dhabi and a declaration on waterpipe/hookah was created. Policy development is a key component of this declaration. Policies are required to stop the global spread of waterpipe / hookah tobacco smoking; this needs to be a public health priority. Urgent policy priorities include a ban on flavoured waterpipe/hookah products and specific inclusion of waterpipe/hookah smoking in clean indoor air regulations, restrictions on access by youth and eliminating waterpipe/hookah tobacco product advertising and marketing.^{xxvii}

These concerns are not unlike the concerns Nova Scotia had with tobacco use over a decade ago which the government of the day responded to with strong, comprehensive legislation to protect Nova Scotians. This is why Smoke Free Nova Scotia strongly encourages the Government to amend the existing Nova Scotia Smoke-Free Place Act and Tobacco Access Act to further protect Nova Scotians, particularly youth, from water pipe/hookah use, and the herbal and tobacco substances used in them.

FLAVOURED TOBACCO PRODUCTS

Flavoured tobacco products include menthol cigarettes, as well as mint-, candy-, or fruit-flavoured cigarillos, cigars, shisha (waterpipe tobacco), blunt wraps (flavoured tobacco wrappers to roll tobacco or other substances), bidis (small cigarettes), and smokeless tobacco. These products are often packaged in brightly-coloured wrappers and are strongly scented (particularly candy- and fruit-flavoured products such as mint, cherry, peach, strawberry, grape, mango, vanilla and other flavours appealing to youth).

In the late 1990s, innovations in flavour technology resulted in the appearance of candy-, fruit- and alcohol-flavoured cigarettes on the market.^{xxviii} Flavoured cigarette brand extensions – traditional cigarette brands that created new flavoured versions – boosted sales by almost 10% for some brands.^{xxix} Flavoured tobacco is among the product innovations used by tobacco companies to promote the appeal of their products to young people.^{xxx}

Fruit and candy-flavoured tobacco products and menthol cigarettes mask the harsh taste of tobacco and make it easier for youth to become addicted. Menthol allows a person to inhale smoke more deeply and enhances nicotine absorption which increases the related health risks.

For the first time in 2013 Canadian students in grades 6-12 were surveyed about their use of menthol cigarettes. Of those Nova Scotia students who smoked, one in three (34%) smoked menthol cigarettes.^{xxxi} This is alarming as research shows teens who try menthol cigarettes are more likely to continue to smoke than those who start experimenting with regular cigarettes.^{xxxii} To put this menthol use by Nova Scotia youth use in context, the Canadian tobacco industry indicates that menthol cigarette use is on the decline among adults and represents 4.5% of the cigarette market in Canada.^{xxxiii}

A recent review of the evidence by the US Food and Drug Administration concluded that menthol in cigarettes is likely associated with increased initiation and progression to regular cigarette smoking, as well as reduced success in quitting smoking.^{xxxiv}

Why Additives and Flavours?

Flavours in tobacco products make the products more palatable and attractive to new users,^{xxxv xxxvi xxxvii} and are seen by the tobacco industry as providing additional “consumer benefits”, including increased social acceptance because of pleasing aromas and aftertaste, increased excitement (including sharing flavours), increased smoking enjoyment, and a “high curiosity to try factor.”^{xxxviii}

The World Health Organization’s Framework Convention on Tobacco Control states that sweet-flavoured cigarettes fall into the category of products likely to create an erroneous impression that the product is less harmful than other tobacco products.^{xxxix}

How accessible are flavoured products?

Flavoured tobacco products are affordable to youth as many of them are sold individually for less than a toonie. Through marketing tactics designed to attract youth and by making these products affordable, they have become increasingly popular among youth in recent years.

Since July 2010, the federal Tobacco Act has banned flavoured cigarettes, cigarillos and blunt wraps. Cigarillos are defined as cigars weighing 1.4g or less, or as having a cigarette filter. However, tobacco companies have avoided the federal definition by marketing flavoured cigarillos weighing just more than 1.4g. Thus flavoured “cigars” with the same packaging, flavours and prices as flavoured cigarillos are still accessible. Unfortunately flavoured spit tobacco, little flavoured cigars, waterpipe tobacco and menthol cigarettes are currently exempt from the federal Tobacco Act.

Are Nova Scotia school children using flavoured tobacco products?

Since the 2010 federal ban on candy flavoured cigarillos proved ineffective due to a legislative loophole, flavoured tobacco products have become extremely popular with youth.

According to a recent national study of flavoured tobacco and youth, nearly half of all tobacco users in grades 6-12 in Nova Scotia are using flavoured tobacco products (47%). This equals a population estimate of 3,600 students. And 35% smoked menthol cigarettes in the previous 30 days, a population estimate of 1,800 students. This compares to 49% and 29% nationally.^{xi}

Of the Nova Scotia grade 6-12 students who used the following products in the last 30 days, the majority used flavoured products:

- 73% used flavoured cigarillo or little cigars
- 63% used flavoured smokeless tobacco
- 58% used flavoured cigars
- 34% used menthol cigarettes
- 28% used flavoured waterpipe

Tobacco use continues to be the leading preventable cause of death and disease in our province. It is responsible for 30 per cent of all cancer deaths and 85 per cent of lung cancer deaths. That’s 1,700 deaths in Nova Scotia each year from tobacco use.

Preventing youth from smoking before they start is paramount. Four out of five Canadians who smoke start before the age of 18.^{xii} Restricting flavoured tobacco products, including menthol, that target young Nova Scotians can have a huge impact on the rates of smoking, cancer, and heart disease.

Are more youth than adults using flavoured products?

Menthol cigarettes, flavoured cigarillos/little cigars, flavoured smokeless and flavoured waterpipe tobacco are far more popular among 15-19 year olds and 24-24 year olds, than those 25-44 years and especially those 45 years and older.^{xlii} These product categories are heavily flavoured and are far more popular among children and youth.

Menthol: The Canadian tobacco industry indicates that menthol cigarette use is on the decline among adults and represents a very small percentage at 4.5% of the cigarette market in Canada.^{xliii} The Youth Smoking Survey data reveals that 34% of Nova Scotia school children in grades 6 to 12 who smoke are using menthol cigarettes.^{xliv}

Cigarillos: Approximately, 4% of all Canadians aged 15 and older used cigarillos in the last 30 days. Whereas, 6% aged 15 to 19 years, and 9% aged 20 to 24 years reported smoking any type of cigar in the past 30 days.^{xlv}

Waterpipe: Less than 1% of Canadians used waterpipe in the last 30 days.^{xlvi} Whereas, 3% aged 15-19 years used waterpipe in the last 30 days.^{xlvii}

There is growing provincial action to prohibit the sale of flavoured tobacco.

New Brunswick, Saskatchewan and Ontario have approved legislation to prohibit flavoured tobacco including. Ontario has prohibited flavoured cigarillos; however the definition is based on the federal definition of cigarillos. All three of these provinces have adopted, but have not yet used, regulatory authority to prohibit other flavoured tobacco products. In addition, B.C. has longstanding regulatory authority over tobacco products that could be used to ban flavoured tobacco products. Quebec is currently considering a ban on flavoured tobacco products.

On November 25, 2013 Alberta passed the Tobacco Reduction (Flavoured Tobacco Products) Amendment Act. The bill gives the government full regulatory authority over all flavoured tobacco products including menthol cigarettes.

It is critical that the amendments to the Tobacco Access Act prohibit the sale of candy, alcohol and menthol flavoured tobacco products, electronic cigarette/electronic nicotine delivery system liquids and waterpipes/hookah pipe shisha (herbal and tobacco). The substances used in e-cigarettes and waterpipes may or may not contain tobacco and to test them in order to enforce the existing Tobacco Access Act is cost prohibitive and resource intensive. The major multinational tobacco companies now own electronic cigarette brands and are using flavouring to promote initiation and use of these products by children and youth the same way they have for traditional tobacco products.

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