TORONTO

STAFF REPORT
ACTION REQUIRED

Health Risks of Indoor Waterpipe Smoking

Date:	March 10, 2014
To:	Board of Health
From:	Medical Officer of Health
Wards:	All
Reference Number:	

SUMMARY

Since 2006, the Smoke-Free Ontario Act (SFOA) has prohibited the smoking of lighted tobacco in enclosed public places and workplaces, including the use of waterpipes (also known as hookahs) for this purpose. However, the SFOA does not apply to indoor use of waterpipes to smoke herbal, non-tobacco products. This has led to a proliferation of waterpipe bars, restaurants and cafes across the province where indoor smoking of ostensibly 'tobacco-free' products is permitted.

Waterpipe smoking gives rise to at least four concerns for public health: 1. smoking of waterpipe tobacco products poses well-established health risks for users and those exposed to second-hand smoke; 2. waterpipe smoking of even non-tobacco products indoors undermines the success of the SFOA, because it contributes to the social acceptability of smoking in public places; 3. it is difficult for smokers or enforcement staff to ensure that the product smoked is non-tobacco based; and 4. emerging research indicates that waterpipe smoking of non-tobacco/herbal substances has an adverse impact on indoor air quality that can lead to unhealthy exposures.

This report reviews evidence on the use and health effects of waterpipe smoking in indoor public places, including recent evidence on indoor air quality at waterpipe cafes in Toronto. It recommends that the Medical Officer of Health report, in consultation with the City Solicitor and community stakeholders, on measures to address health risks from indoor waterpipe use at commercial establishments, including possible prohibition.

RECOMMENDATIONS

The Medical Officer of Health recommends that:

1. The Board of Health request the Medical Officer of Health, in consultation with the City Solicitor and community stakeholders, to report back by end of 2014 on measures, including prohibition, to address the health risks of indoor waterpipe smoking at Toronto commercial establishments; and

2. The Board of Health urge the Federal Minister of Health to amend the Tobacco Act and regulations to explicitly include waterpipe tobacco products; and

3. The Board of Health forward this report for information to the Ontario Minister of Health and Long-Term Care, Public Health Ontario and the Association of Local Public Health Agencies.

Financial Impact

There are no direct financial impacts arising from this report beyond what has already been approved in the current year's budget.

DECISION HISTORY

On October 19, 2012, the Licensing and Standards Committee considered the report Review of Businesses Operating as Vapour Lounges and a Discussion of the Status of Hookah / Shisha (http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.LS16.2). The Licensing and Standards Committee referred the item back to the Executive Director, Municipal Licensing and Standards, for a further report to the Committee.

On October 22, 2012, the Board of Health adopted the recommendations of the report *Toronto Public Health Tobacco Control Plan Update 2012* (http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.HL17.3). The Board recommended that given the emerging evidence on the harms associated with non-tobacco waterpipe use, the Ministry of Health and Long-Term Care (MOHLTC) work in conjunction with Public Health Ontario to actively monitor emergent research on this issue and consult with stakeholders including local public health units and the Ontario Tobacco Research Unit on appropriate strategies to minimize harm.

On September 30, 2013, the Board of Health adopted, with amendments, the recommendations of the report Smoke-Free Toronto: Strengthening Protection (http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.HL24.3). The Board requested Toronto Public Health staff to meet with Youth Health Action Network (YHAN) to discuss waterpipe usage of youth when considering the current report to the Board of Health expected in 2014.

ISSUE BACKGROUND

A waterpipe (also known as hookah, narghile, goza or hubble bubble) is a device used to smoke moist tobacco or herbal (non-tobacco) products known as shisha. Shisha is often sweetened or mixed with fruit and offered in a variety of flavours. The shisha is usually heated by burning charcoal. The resulting smoke passes through the device and is cooled by water before being inhaled by the user through a hose and mouthpiece. Hookah smoking is frequently a collective activity. Multiple people often take turns using a waterpipe during one smoking session, either using the same mouthpiece or inhaling through separate mouthpieces. Waterpipes were traditionally used to smoke tobacco products in Iran, South Asia and Middle Eastern countries, but their use has recently increased in North America, particularly among youth and young adults.

Bars, restaurants and cafes in Toronto can offer waterpipes for use by their clients without a specific license. Although they are difficult to quantify, TPH estimates that more than 65 businesses allow waterpipe smoking indoors. Only non-tobacco shisha can be legally smoked in these establishments, as the Smoke-Free Ontario Act (SFOA) prohibits smoking tobacco in workplaces and enclosed public places. However, shisha products are often poorly labelled, making it difficult for local Tobacco Enforcement Officers (TEOs) (and sometimes patrons) to know whether or not tobacco is being used. Tobacco shisha is not identified as a tobacco product in the federal *Tobacco Act* and its regulations with respect to health warning and packaging requirements. As such, waterpipe tobacco products do not have to display the health warnings, consumer information or toxic emission data required of other tobacco products. Furthermore, TEOs are not currently permitted to seize and test product for the presence of tobacco. In November 2013, however, the Ontario government introduced an amendment to the SFOA that if passed, would give TEOs the authority to take samples and test for the presence of tobacco in waterpipe establishments.

Public health agencies across Ontario have expressed concern that the use of waterpipes in indoor public places poses a health risk to the user or people exposed to the smoke. Concerns associated with waterpipe establishments include potentially harmful air quality levels (regardless of the substance being smoked), their attractiveness to youth and their contribution to the social acceptability of smoking indoors.[1]

In October 2012, the Medical Officer of Health outlined potential health effects of non-tobacco waterpipe use and second-hand waterpipe smoke in the BOH report *Toronto Public Health Tobacco Control Plan Update, 2012*.[2] Toronto Public Health also provided input to a report from the Executive Director, Municipal Licensing and Standards to the Licensing and Standards Committee recommending the development of a business licensing regime for waterpipe establishments.[3] At that time, TPH concluded that while the health risks of waterpipe tobacco smoking are well established, further research on non-tobacco/herbal waterpipe smoking was needed before recommending a policy response. Since late 2012, new evidence and recent action taken in other jurisdictions reinforce the need to implement measures to reduce the harm associated with indoor waterpipe use in Toronto.

This report outlines the new evidence on potential health risks of indoor waterpipe use, input given by Toronto's Youth Health Action Network on waterpipe usage of youth and a summary of actions in other jurisdictions. This report has been reviewed by staff from Municipal Licensing and Standards.

COMMENTS

Waterpipe usage is increasing in Canada. According to the Canadian Tobacco Use Monitoring Survey (CTUMS), 10% or approximately 2.8 million Canadians aged 15 years and older reported having ever tried a waterpipe in 2012, higher than in 2011 (8%) and 2006 (4%). Waterpipe use was higher among youth and young adults: 13% of Canadian youth aged 15-19 and 28% of young adults aged 20-24 reported having ever tried a waterpipe. [4] Furthermore, data from the 2013 Ontario Student Drug Use and Health Survey indicate that approximately 10% of students in grades 7-12 used a waterpipe in the past year.[5]

Health Risks of Indoor Waterpipe Use – Tobacco

According to the 2012 CTUMS, 27% of Canadians who had used a waterpipe in the past 30 days thought that using a waterpipe to smoke tobacco was less harmful than smoking a cigarette.[4] Contrary to the common misperception that the water in a waterpipe filters the nicotine and other harmful chemicals from the inhaled tobacco shisha smoke,[6,7] research studies suggest that while waterpipe smoking may be associated with lower levels of nicotine exposure compared to cigarette smoking, it is associated with greater exposure to carbon monoxide (CO) and to benzene, a chemical that has been causally linked to leukemia.[8]

The health risks of exposures from waterpipe tobacco smoking are reasonably well understood. Several studies indicate that people who use a waterpipe to smoke tobacco shisha are at risk for health effects similar to those from cigarette smoking.[9,10,11,12] A 2010 systematic review of 24 studies found that waterpipe tobacco smoking was significantly associated with lung cancer, respiratory illness, low birth weight, CO poisoning, adverse cardiac events and periodontal disease.[11]

Non-smokers in waterpipe tobacco smoking establishments are also at risk. A study of second-hand smoke exposure in waterpipe cafés (with tobacco shisha smoking) and cigarette smoking rooms in Virginia found that mean levels of fine particulate matter ($PM_{2.5}$ - air pollutant particles with a diameter of 2.5 microns or less) were 374 micrograms per cubic metre ($\mu g/m^3$), a value higher than businesses where cigarette smoking was permitted.[13] $PM_{2.5}$ is an air pollutant that is formed from combustion and is often a marker of exposure to secondhand smoke, though it can also come from other sources in the indoor environment.[14] Because of their small size, these particles are inhaled deep into the lungs and increase the risk of heart and lung diseases.[15]

The SFOA prohibits indoor tobacco smoking, including waterpipe tobacco use, in enclosed public places and workplaces in Ontario. However, shisha packages are often poorly labelled, making it difficult to tell if the product being served contains tobacco. Therefore waterpipe café patrons and staff are also at increased risk for the negative

health effects of tobacco smoking, including nicotine dependence, and second-hand smoke exposure, in some cases without realizing it. Notably, a recent study conducted by the Ontario Tobacco Research Unit (OTRU) at twelve indoor Toronto waterpipe cafes that claimed to serve only 'tobacco-free' products found mean levels of air nicotine (3.27 $\mu g/m^3$) that were comparable to nicotine levels found in a European study of cigarette smoking bars and restaurants.[16]

Health Risks of Indoor Waterpipe Use – Non-Tobacco or Herbal

Few studies focus on the air quality impacts, exposures and health risks from waterpipe smoking of non-tobacco/herbal shisha products, the only type that can be legally smoked in indoor establishments in Ontario. However, emerging evidence indicates that compared to cigarette or waterpipe tobacco smoking, herbal waterpipe smoking exposes the user to similar (or higher) levels of some cancer-causing chemicals, including polycyclic aromatic hydrocarbons (PAH)[17,18] and heavy metals,[17] as well as potentially harmful levels of CO and tar.[17,18] A recently published study from the University of Alberta (U of A) found that the mainstream smoke emissions of herbal shisha, that is, the smoke that the waterpipe user would inhale, contained substantial amounts of toxicants which were equal to or greater than those from a tobacco-based shisha. In particular, levels of tar and CO were higher in the herbal blend, whereas nitric oxide and benzo[a]pyrene, a type of PAH that is carcinogenic, were similar in both types of shisha. The U of A study also analysed the constituents of the sidestream smoke, that is, the smoke that bystanders would be exposed to, produced from burning either herbal or tobacco shisha in a waterpipe. This analysis showed that ultrafine particulate levels ($PM_{0.01}$) were similar, but benzo[a]pyrene levels were higher for the herbal shisha. This study provides some indication of the potential impacts on indoor air from herbal waterpipe smoking.

Few published studies have assessed the air quality in actual waterpipe cafes where non-tobacco/herbal shisha is used, a context that gives more exact information about exposures to staff and patrons of these establishments. Particularly relevant to Toronto is OTRU's 2013 study of twelve local waterpipe cafes which found that during two-hour measurement sessions, the average $PM_{2.5}$ level in these cafes was 1419 $\mu g/m^3$ and average ambient CO was 17.7 parts per million (ppm). These pollutant levels are an order of magnitude higher compared with background levels (outdoor spaces with no nearby smoking).[16]

As noted earlier, $PM_{2.5}$ is an important air pollutant associated with increased risks for respiratory and cardiac diseases. While there are no standards for $PM_{2.5}$ in the indoor environment, Health Canada notes that average residential levels are less than 15 $\mu g/m^3$ in non-smoking households or less than 35 $\mu g/m^3$ in homes with smokers. To provide a context to their findings, the study authors compared the $PM_{2.5}$ levels measured to standards for exposure from outdoor air based on the Air Quality Index (AQI) of the US Environmental Protection Agency (US EPA). They concluded that these levels would be "hazardous" to staff who work 8-hour shifts. The measured $PM_{2.5}$ levels are considered in the "unhealthy" to "very unhealthy" range for patrons (depending on the number of active waterpipes). Furthermore, CO levels exceeded the maximum limit recommended

by Health Canada's Residential Indoor Air Quality Guideline (IAQG) (25 ppm based on a one hour average, and 10 ppm based on a 24h average) in 25% of the Toronto waterpipe venues tested.[16] The Health Canada IAQG one hour average for CO is the same value as the current occupational exposure limit for Ontario workplaces set out by the Ministry of Labour.[19] Researchers indicate that the source of the CO and the particulate matter may be from the burning of the charcoal used to heat the shisha.[13,20]

The U of A study described above measured air quality for one hour in six waterpipe cafes in Edmonton and reported lower mean levels of $PM_{2.5}$ (overall mean level of 264 $\mu g/m^3$) and CO (6.7 ppm),[17] closer to the levels seen in studies conducted elsewhere.[13] In both studies however, the measurements showed a dose-response relationship in that with higher numbers of active waterpipe smokers and longer duration of smoking sessions, the air measures of $PM_{2.5}$ and CO were higher. Both studies note that ventilation in the venues would also impact the measured air pollutant levels.

Overall, OTRU researchers concluded that staff and patrons in indoor waterpipe establishments are exposed to air quality levels that are considered harmful based on high levels of $PM_{2.5}$, CO and air nicotine.

Regardless of the substance being smoked, indoor waterpipe establishments contribute to the social visibility of smoking in public places. This in turn, influences the perceived acceptability of smoking, particularly among youth.[21] Many Toronto waterpipe cafes permit entry to minors.[3] As noted earlier, survey data reveals that waterpipe smoking is often perceived as less harmful, less addictive and more socially acceptable than cigarette smoking.[6,7]

Waterpipe Cafes in Toronto

As of January 2014, TPH identified at least 66 restaurants, bars or lounges that allow waterpipe smoking indoors. A map of these locations is available in Appendix A. This map highlights the accessibility of waterpipe smoking establishments to youth. Most are located near a TTC station, and many are near secondary schools, colleges and universities or places youth frequent. Availability of waterpipe establishments can encourage youth uptake or experimentation with waterpipe smoking.

Because establishments are not required to have a license for allowing waterpipe smoking, there is minimal information on the nature, practices and clientele of these businesses in Toronto. In 2012, MLS conducted a consultation but was only able to reach five operators who were interviewed in person. Municipal Licensing and Standards also received ten completed surveys in response to a mailout to 30 such establishments. The focus of the MLS consultation was on health and safety concerns.

Toronto Public Health TEOs note anecdotally that some waterpipe establishments appear to cater largely to patrons for whom this practice has cultural roots. However, a growing number of establishments appeal to people of all cultural backgrounds, including youth.

Meeting with the Youth Health Action Network

The Youth Health Action Network (YHAN) is a TPH initiative that is led by and created for City of Toronto youth ages 16 to 24. YHAN members use peer education and health advocacy tools to take action on public health issues, including youth waterpipe use. At the direction of the Board of Health in October 2013, TPH staff met with YHAN members in November 2013 to discuss waterpipe usage of youth. Members expressed concern that waterpipe use is becoming increasingly popular among youth and is becoming a normal part of student culture. For example, some of Toronto's post-secondary institutions, including York University and Ryerson University, incorporate free, outdoor, waterpipe smoking in welcome week activities for new students. Waterpipe establishments are often located in close proximity to university and college campuses, have no age restrictions to enter and are inexpensive to use. Informal street interviews conducted by YHAN members with youth ages 18-24 indicate that many youth are not aware of the risks associated with waterpipe smoking, and may consider it a healthier alternative to cigarette smoking. Furthermore, many assume that shisha products do not contain tobacco or nicotine, which may not always be the case as noted in the OTRU study.

The YHAN has undertaken a number of activities to raise awareness among youth about the negative health effects associated with waterpipe smoking. These include Youtube videos of 'street buzz' interviews with youth,[22] a youth forum on waterpipe, a social media campaign and a lunch and learn at George Brown College. However, they expressed the need for legislative action at the local or provincial level to restrict youth waterpipe use indoors as well as more research on the health effects of both herbal and tobacco-based shisha.

Actions in Other Canadian Jurisdictions

With the exception of Quebec and Alberta, provincial and territorial smoke-free legislation in Canada only pertains to tobacco use. In 2008, Quebec introduced a regulation under their tobacco control legislation that specifies that any non-tobacco product that is intended to be smoked is considered to be tobacco. More recently, Alberta passed legislation in 2013 that bans the use of "tobacco-like" products in public places where smoking is prohibited. In Ontario, the SFOA only applies to indoor tobacco use. In November 2013, the Minister of Health and Long-Term Care introduced an SFOA amendment that, if passed, would allow TEOs to test for tobacco use at waterpipe establishments. Similarly, most local by-laws across Canada pertain only to tobacco, with the exception of some municipalities in British Columbia and Ontario.

Since 2012, four Ontario municipalities have prohibited waterpipe use in indoor public places regardless of whether tobacco or herbal shisha is being smoked: Peterborough, Orillia, Bradford West Gwillimbury and Barrie. These municipalities had few, if any, waterpipe smoking establishments prior to bylaw enactment. Therefore, the purpose of these by-laws was to prevent waterpipe establishments from opening in the municipality. These jurisdictions set an important precedent for local action to reduce the harms associated with indoor waterpipe smoking in Ontario.

In 2007, the City of Vancouver enacted a by-law prohibiting the burning of any weed or substance in indoor public places, including non-tobacco waterpipe products. In 2011, two waterpipe smoking establishment owners challenged the by-law in British Columbia Provincial Court, claiming that it violates their Canadian Charter right to cultural freedom. Toronto Public Health is actively monitoring this case, which at the time of this report is still pending.

Conclusions and Recommended Approach

As demonstrated in this report, waterpipe smoking in indoor public places is a public health concern for the following reasons:

1. well-established health risks associated with indoor waterpipe tobacco use and second-hand smoke-exposure;
2. evidence that some Toronto waterpipe establishments illegally allow tobacco smoking indoors;
3. emerging evidence that non-tobacco waterpipe smoke impacts air quality and therefore can have negative consequences for health, especially for workers; and
4. the importance of denormalizing all smoking behaviour and promoting a smoke-free lifestyle to children and youth.

The use of waterpipes to smoke both tobacco and non-tobacco products in indoor public places undermines local and provincial efforts to reduce tobacco use and smoking initiation, especially among youth, and to lower health risks to non-smokers.

This report recommends that the MOH, in consultation with the City Solicitor and community stakeholders, report on measures, including prohibition, to address the health risks of indoor waterpipe smoking in Toronto's commercial establishments.

The MOH is also recommending that the Federal Minister of Health amend the Tobacco Act and regulations to explicitly include tobacco waterpipe products so that they require similar health warnings and consumer information as other tobacco products. This will improve enforcement efforts by TEOs at waterpipe smoking establishments. Improved package labeling will also increase consumer awareness among people who purchase shisha for personal use.

If the proposed recommendations are adopted, TPH will work with the City Solicitor and affected stakeholders, including business owners, staff and patrons, as well as other City divisions, to develop an appropriate approach to address the health risks of indoor waterpipe smoking in public places. Toronto Public Health will continue to consult other Ontario jurisdictions that have prohibited waterpipe use, and will also continue its work with the YHAN to increase public awareness about the health risks of waterpipe smoking, particularly among youth.

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SIGNATURE

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ATTACHMENTS

Appendix A – Toronto Commercial Waterpipe Smoking Locations, 2014

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