The Evolution of Smoke-Free Outdoor Spaces

Background

When it comes to second-hand smoke (SHS), Canadians are in the midst of a major social norm change. Now that virtually all indoor workplaces and public places are smoke-free, there is a growing appetite for more smoke-free public spaces outdoors, even among smokers.[1] As people's exposure to SHS decreases, their tolerance for exposure decreases as well, manifesting in greater public demand for SHS protection.

The Smoking and Health Action Foundation/Non-Smokers' Rights Association tracks bylaws regulating smoking in many outdoor spaces. There are now over 200 municipalities in Canada, 118 of them in Ontario, with smoke-free bylaws that exceed the *Smoke-Free Ontario Act* (2006) in some fashion. The vast majority of these prohibit or regulate smoking in public outdoor spaces, including:[2]

- Beaches
- Child daycare and pre-school grounds
- Construction sites
- Doorways, air intakes and operable windows to all workplaces and places to which the public has access
- Doorways, air intakes and operable windows to multi-unit dwellings
- Hospital and Long-term care facility grounds
- Markets
- Municipal property
- Outdoor events (e.g., parades, fairs, concerts, sporting events, and other spectator events)
- Parks
- Patios
- Playgrounds
- Post-secondary education campuses
- Sports and recreation fields and facilities
- Streets and sidewalks
- Trails
- Transit stops and shelters
- Zoos

Why Smoke-Free Outdoor Spaces?

There are a number of good reasons to restrict or prohibit smoking outdoors, including protecting children from social exposure to smoking and tobacco industry products, assisting smokers who are trying to quit, preventing ex-smokers from starting to smoke again, reducing butt litter and risk of fire, and in some circumstances, offering protection from exposure to SHS.

[1] Thomson G, Wilson N, Edwards R. At the frontier of tobacco control: a brief review of public attitudes toward smoke-free outdoor places. *Nicotine and Tobacco Research* 2009; 11(6):584-90.
[2] Smoking and Health Action Foundation/Non-Smoker's Rights Association (2013). *Smoke-Free Laws Database*. http://www.nsra-adnf.ca/cms/smoke-free-laws-database.html.

Role Modeling and Social Exposure

Smoke-free outdoor spaces remove negative adult role modeling and decrease the social acceptability of smoking.[3] This reduces the opportunities to smoke and denormalizes tobacco use among youth, which may help reduce smoking prevalence among future generations. Indeed, the Smoke-Free Ontario Scientific Advisory Committee (SAC) emphasizes the importance of addressing children's social exposure to tobacco: evidence confirms that children who grow up surrounded by smoking are themselves more likely to smoke. The SAC therefore recommends smoke-free regulations for parks, playgrounds and sports fields—anywhere children play. [4]

Examples of smoke-free outdoor spaces signage from various Ontario municipalities

Impact on Smokers

Studies show that SHS regulations help smokers cut down on the number of cigarettes they smoke per day and even assist them to quit entirely as smoking becomes less convenient and less socially acceptable. Smoke-free public places also enable smokers who are trying to quit avoid relapse by reducing ambient cues to smoke.[5]

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[3] Thomson G, Wilson N, Edwards R. At the frontier of tobacco control: a brief review of public attitudes toward smoke-free outdoor places. *Nicotine and Tobacco Research* 2009; 11(6):584-90.

[4] Smoke-Free Ontario – Scientific Advisory Committee. *Evidence to Guide Action: Comprehensive Tobacco Control in Ontario*. Toronto, ON: Ontario Agency for Health Protection and Promotion, 2010. http://www.oahpp.ca/services/documents/evidence-to-guide-action/Evidence%20to%20Guide%20Action%20-%20CTC%20in%20Ontario%20SFO-SAC%202010E.PDF.

[5] U.S. Centers for Disease Control and Prevention (no date). Smoke-Free Policies Reduce Smoking. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health http://www.cdc.gov/tobacco/data_statistics/fact_sheets/secondhand_smoke/protection/reduce_smoking/index.htm.

"Smoke-free policy interventions are effective mechanisms to reduce exposure to tobacco smoke, prevent initiation of smoking, encourage cessation, support recent quitters and contribute to denormalization of tobacco use."[6]

Woodstock, Ontario passed a smoke-free outdoor bylaw in 2008 that is still considered leading edge due to the number of outdoor places where smoking is prohibited. Evaluation of the bylaw, which used two different study samples post-implementation, found that smokers from both the general population (30%) and the targeted sample (42%) reported that the restrictions helped them reduce the number of cigarettes they smoke. In addition, 15% of smokers from the general population sample and 26% from the targeted sample reported that the smoke-free bylaw made them more likely to quit.[7]

The Environment

Cigarette butts are frequently cited as the most common type of litter. More than being simply a public eyesore, butt litter contaminates sandboxes, beaches and waterways and can also harm small children and wildlife.[8] Moreover, cigarette butts take about a decade or more to break down and never fully biodegrade.[9,10] The fire risk to parks and other wilderness areas has also been cited as a factor, positively influencing public opinion with respect to smoke-free outdoor spaces.[11] This issue factored into the 2012 decision to make all Metro Vancouver Regional parks smoke-free, which also had the full support of municipal fire departments.[12]

[6] Smoke-Free Ontario – Scientific Advisory Committee. *Evidence to Guide Action: Comprehensive Tobacco Control in Ontario*. Toronto, ON: Ontario Agency for Health Protection and Promotion, 2010. http://www.oahpp.ca/services/documents/evidence-to-guide-action/Evidence%20to%20Guide%20Action%20-%20CTC%20in%20Ontario%20SFO-SAC%202010E.PDF.

[7] Kennedy RD. *Evaluation of the City of Woodstock's Outdoor Smoking By-law: A Longitudinal Study of Smokers and Non-Smokers*. A thesis presented to the University of Waterloo in fulfillment of the thesis requirement for the degree of Doctor of Philosophy in Psychology. Waterloo, Ontario, Canada, 2010. http://uwspace.uwaterloo.ca/bitstream/10012/5397/3/RDK_final_GSO_2ndrevision.pdf.

[8] Novotny TE *et al*. Tobacco and cigarette butt consumption in humans and animals. *Tobacco Control* 2011;20 Suppl 1:i17-20. http://tobaccocontrol.bmj.com/content/20/Suppl_1/i17.full.pdf+html.

[9] Novotny TE *et al*. Cigarettes butts and the case for an environmental policy on hazardous cigarette waste. *International Journal of Environmental Research and Public Health* 2009; 6(5):1691-705. http://www.mdpi.com/1660-4601/6/5/1691.

[10] Forsythe J. *Smoke-Free Outdoor Public Spaces: A Community Advocacy Toolkit.* Physicians for a Smoke-Free Canada, Ottawa, Ontario. September 2010.

[11] Thomson G, Wilson N, Edwards R. At the frontier of tobacco control: a brief review of public attitudes toward smoke-free outdoor places. *Nicotine and Tobacco Research* 2009; 11(6):584-90.

[12] Metro Vancouver. *Metro Vancouver Regional Parks No Smoking Policy*. http://www.metrovancouver.org/services/parks_lscr/NoSmoking/Pages/default.aspx.

Protection from Exposure to SHS

In situations where people are exposed to SHS outdoors in close proximity to smokers, for example, on patios, around doorways, and at festivals and markets, protection becomes an issue. Both the World Health Organization (WHO) and the US Surgeon General have determined that there is no safe level of exposure to SHS.[13,14] Second-hand smoke dissipates more readily outdoors than indoors,[15] but under certain conditions it can reach the same level of concentration as indoors. This is very much dependent on the number of smokers and their distribution and location, wind speed and direction, stability of the atmosphere, and whether the area is partially enclosed or not.[16,17,18]

Measurement of airborne particulate matter (PM) is the most common method used to assess SHS exposure. Average fine particle levels near smokers outdoors over the course of one or more cigarettes can be comparable to indoor SHS particle levels in living rooms or bedrooms during active smoking.[19] Average, not peak, particle concentrations can reach hundreds of micrograms per metre cubed ($\mu g/m^3$).[20] As a reference, the U.S. Environmental Protection Agency's Air Quality Index indicates that concentrations between 150.5 – 250.4 $\mu g/m^3$ are considered "very unhealthy" and between 250.5 – 500 $\mu g/m^3$ are "hazardous."[21]

The health risks of SHS outdoors are of particular concern for restaurant and bar servers who can be exposed to SHS throughout their shifts during patio season. Studies also show that smoke from patios can drift ***into*** hospitality establishments through doors, windows and air intakes, thereby compromising the "smoke-free" indoor space.[22,23] This problem is

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[13] World Health Organization (2007) *Protection from Exposure to Second-Hand Tobacco Smoke. Policy Recommendations*. http://whqlibdoc.who.int/publications/2007/9789241563413_eng.pdf.

[14] U.S. Department of Health and Human Services (2010). *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General.* Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2010. http://www.surgeongeneral.gov/library/reports/tobaccosmoke/index.html.

[15] Cameron M *et al*. Secondhand smoke exposure (PM2.5) in outdoor dining areas and its correlates. *Tobacco Control* 2010; 19(1):19-23.

[16] Ibid.

[17] Stafford J, Daube M, Franklin P. Second hand smoke in alfresco areas. *Health Promotion Journal of Australia* 2010; 21(2):99-105.

[18] Licht AS *et al*. Secondhand smoke exposure levels in outdoor hospitality venues: a qualitative and quantitative review of the research literature. *Tobacco Control* 2013; 22(3):172-9.

[19] Klepeis NE, Ott WR & Switzer P. Real-time measurement of outdoor tobacco smoke particles. *Journal of the Air & Waste Management Association* 2007; 57:522-534.

[20] Licht AS *et al*. Secondhand smoke exposure levels in outdoor hospitality venues: a qualitative and quantitative review of the research literature. *Tobacco Control* 2013; 22(3):172-9. See Appendix A – Summary of all peer reviewed studies of outdoor secondhand smoke exposure published through June, 2012 organized according to study design (experimental vs. observational) and exposure assessment (n=16).

[21] U.S. Environmental Protection Agency (2012). EPA Fact Sheet: Revised Air Quality Standards for Particle Pollution and Updates to the Air Quality Index (AQI). http://www.epa.gov/pm/2012/decfsstandards.pdf.

[22] Kaufman P *et al*. Not just 'a few wisps': real-time measurement of tobacco smoke at entrances to office buildings. *Tobacco Control* 2011; 20(3):212-8.

especially evident if the patio is partially enclosed.[24,25] Therefore 100% smoke-free patios protect employees and patrons from SHS exposure as well as protect the smoke-free status of indoor spaces.

Smoking at the entrances of buildings is a nuisance to all and an immediate health hazard to some, but as yet, there is no broad consensus regarding the ideal distance for buffer zones. James Repace, a world renowned SHS expert, has conducted his own experiments in a variety of outdoor settings to measure SHS pollution. He has concluded that smoke levels do not decrease to background levels for fine particles or carcinogens until about 7 m from the source.[26] With respect to building entrances, Repace notes that many buildings are "air starved," and that when a door is opened, suction can drag outside air in, along with SHS from groups of smokers clustered around the entrance. A Canadian study looking at smoking around building entrances found that "people passing by entrances could be exposed to a 2.5-fold higher level of $PM_{2.5}$ with ≥ 5 lit cigarettes than the background level, even if the lit cigarette was 3 m away."[27] Buffer zones vary considerably across Canada, with most provincial laws and municipal bylaws currently prohibiting smoking within 1-9 m from buildings.[28]

Compliance and Enforcement

A decade ago, opponents to smoke-free public places scoffed at the idea of such bylaws being enforceable, suggesting the "smoking police" would be needed at every turn. This clearly did not turn out to be true, even early on. With public education campaigns taking place through warning periods (usually a few months), along with clear signage, people quickly complied with the bylaws. Relatively few charges had to be laid by bylaw enforcement officers and these smoke-free indoor laws are now almost entirely self-enforcing.

In places where smoke-free outdoor spaces bylaws have been passed, there have also been relatively few charges. The City of Ottawa had only a handful in the first year after the bylaw was implemented.[29] Bylaws give people the confidence to speak up and remind smokers that

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[23] Brennan E *et al*. Secondhand smoke drift: examining the influence of indoor smoking bans on indoor and outdoor air quality at pubs and bars. *Nicotine and Tobacco Research* 2010; 12(3):271-7.
[24] López MJ *et al*. Exposure to secondhand smoke in terraces and other outdoor areas of hospitality venues in eight European countries. *PLoS One* 2012; 7(8):e42130. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3411634/pdf/pone.0042130.pdf.
[25] Edwards R, Wilson N. Smoking outdoors at pubs and bars: is it a problem? An air quality study. *New Zealand Medical Journal* 2011; Vol 124 No 1347.
[26] Repace JL. Measurements of outdoor air pollution from secondhand smoke on the UMBC campus. June 1, 2005. http://www.repace.com/pdf/outdoorair.pdf.
[27] Kaufman P *et al*. Not just 'a few wisps': Real-time measurement of tobacco smoke at entrances to office buildings. *Tobacco Control* 2011; 20(3):212-8.
[28] Smoking and Health Action Foundation/Non-Smoker's Rights Association (2013). *Smoke-Free Laws Database*. http://www.nsra-adnf.ca/cms/smoke-free-laws-database.html.
[29] Personal communication, Debbie McCulloch, Ottawa Public Health. March 2013.

a given area is now smoke-free. Moreover, public support for smoke-free public places is always higher after a bylaw has been in place for a while.

Emerging Issues and Future Directions

The emergence of waterpipes (also known as hookahs), and electronic cigarettes[30] are two issues that are already having an impact on smoke-free enforcement efforts in many Canadian municipalities. Their use in public places and workplaces undermines current smoke-free laws, threatens to renormalize smoking and is confusing to the public. Some municipalities have taken action and passed bylaws prohibiting their use in public places. The City of Peterborough, Ontario offers the best example of a bylaw addressing waterpipe use in enclosed public places and workplaces, on licensed patios and outdoors on municipal property: "water pipe means any lighted or heated smoking equipment used to smoke tobacco or non-tobacco substances or any combination thereof in a form that may be smoked or inhaled."[31] Concerned about a lack of scientific evidence on the health effects of exposure to non-tobacco smoke, other bylaws have focused on public nuisance. For example, the City of Ottawa passed a bylaw in 2012 that prohibits the smoking of tobacco or other weeds or substances in hookah pipes outside on municipal property.[32]

The City of Red Deer, Alberta set a Canadian precedent in 2013 by becoming the first municipality to pass a bylaw that specifically addresses the use of e-cigarettes in public places: "smoke or smoking means to inhale, exhale, burn, or have control over a lighted cigarette, cigar, pipe, hooka pipe, or other lighted smoking implement designed to burn or heat tobacco or any other weed or substance for the purpose of inhaling or tasting of its smoke or emissions."[33] As well, some Ontario municipalities, such Peterborough and Georgina, have chosen to prohibit all tobacco use (including smokeless tobacco) in public places.[34] These are relatively new bylaws and it remains to be seen if compliance will be comparable to those that only prohibit smoking.

Conclusion

Smoke-free outdoor spaces were virtually unheard of around the turn of the last century. In a relatively short period of time, public opinion has become highly supportive and an increasing scientific evidence base has helped to propel the adoption of many bylaws across Canada. Smoke-free outdoor spaces offer a number of benefits that go beyond protection from exposure to SHS, including social protection for children from negative role modeling

[30] For more information about e-cigarettes, consult the Non-Smokers' Rights Association brochure *The Buzz on E-Cigarettes*: http://www.nsra-adnf.ca/cms/file/files/e-cig%20Brochure%20FINAL.pdf.
[31] Smoking and Health Action Foundation/Non-Smokers' Rights Association (2013). *Smoke-Free Laws Database*. http://www.nsra-adnf.ca/cms/smoke-free-laws-database.html.
[32] Ibid.
[33] Ibid.
[34] Ibid.

and tobacco industry products, elimination of visual and sensory cues for ex-smokers and smokers trying to quit, and reduction of fire risk and butt litter.

The world is changing quickly with new tobacco and nicotine products coming on the market, and with new and different ways of using them. Judging from the research to date, waterpipe smoking represents a threat to public health, but the jury is still out regarding e-cigarettes. Elected officials need to be well-informed and prepared to respond to these issues, which aren't necessarily black and white. Although the preference is for action at the provincial level to ensure consistency between municipalities, it is at the local level where leadership is exhibited and where smoke- and tobacco-free regulations will continue to evolve.