

Submission to the Inquiry into Modernizing BC's Liquor Laws from the Centre for Addictions Research of BC at the University of Victoria

A briefing for the Honorable John Yap, Parliamentary Secretary

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The **Centre for Addictions Research of BC (CARBC)** (1) at the University of Victoria (www.carbc.ca) was established in 2003 with a \$10 million endowment from the BC Addictions Research Foundation. The Centre's mission is to be an internationally recognized centre dedicated to the study of psychoactive substance use and addiction that supports community wide efforts to promote health and reduce harm. It has been host to several interdisciplinary research programs with faculty, staff and graduate students from many schools/departments including psychology, sociology, health information sciences, community medicine, nursing, economics, political science, geography and anthropology. Understanding the harms associated with alcohol use and policy responses to these have been major research priorities for the Centre.

4 September, 2013

Introduction

There are many reasons for updating and modernizing laws, regulations and policies on alcohol in British Columbia. While there have always been health, safety and social concerns surrounding the use of alcohol, in 2013 we have far clearer scientific data on the basis of these concerns. There is also now a stronger evidence base regarding policies and practices that can minimize harms associated with hazardous drinking.

There are many community expectations that need to be met in the updating process: that consumers should usually be allowed to make informed choices about their own behaviour, that vulnerable groups in the community are protected, that the safety of public spaces and transport systems is maintained, that laws reflect an informed community consensus and that law enforcement is carefully targeted towards high risk settings, products and practices.

In this submission we will recommend ways to address the terms of reference of this enquiry while also meeting expectations from the public for convenient access and fair prices. We provide some key examples of local and international research as appendices in support of our recommendations. We have prioritized recommendations that are capable of simultaneously meeting the Review's potentially conflicting terms of reference.

We are able to draw upon a wealth of BC specific data sources and reports that have been carefully established over the past 10 years including:

- Survey data on drinking patterns of British Columbians (n=9,326)
- Trends in alcohol-related hospital admissions (n=187,909), deaths (n=18,752), crimes (n=807,094) and per capita alcohol consumption from 2002 onwards – by regions and for the province as a whole
- Published studies on how changes to BC alcohol policy (e.g. privatization, liquor pricing) impact rates of hospital admissions, deaths and crimes.

We suggest that modern laws for the control and sale of alcohol should incorporate clear objectives relating to all aspects of the public interest, should target high-risk products and drinking settings, and be monitored for effectiveness against health and social as well as economic indicators. We also suggest that British Columbians need to be better informed about the many health and safety harms associated with alcohol and their attendant costs. This would help build more community support for the adoption of a modern, evidence-based set of legal and regulatory approaches to liquor policy.

Recommendation 1: *The BC Liquor Licensing and Control Act should explicitly state the goals of encouraging low risk use and reducing health, safety and social harms*

The BC Vital Statistics Agency identified 18,752 alcohol-related deaths over the ten-year period between 2002 and 2011 (6% of all deaths) of which 538 involved individuals aged under 25 years (2). The majority of these deaths identified by physicians involved some form of chronic disease, including 2,415 cancer cases. Many alcohol-related deaths, especially those of young adults, also involve fatal injuries associated with violence, self-harm, road trauma or drowning.

Analysis by the BC Centre for Disease Control shows there have been 187,909 hospital admissions caused by hazardous alcohol use between 2002 and 2011 of which 11,931 involved children and teenagers (3). The trend in alcohol-related hospital admissions has been upwards in contrast to a downward trend for tobacco-related illnesses.

The International Research Agency on Cancer (4) has confirmed that the type of alcohol used in alcoholic beverages is carcinogenic. Alcohol is causally related to cancers of the mouth, throat, stomach, colon and breast.

In relation to alcohol's contribution to public safety and crime issues, the application of standard methods to BC crime statistics indicates that between 2002 and 2011 there were 211,683 violent crimes, 322,334 property crimes and 273,077 other types of crime attributable to alcohol – or about one third of all crime incidents (5).

Local and international research confirms that laws governing alcohol licensing and availability as well as the manner of their enforcement can significantly impact on levels of related death, injury and illness in the community (6).

Specifically we recommend:

- BC Liquor Laws make explicit acknowledgement that alcohol is a special commodity that poses risks to the population's health, safety and wellbeing and that liquor laws play a crucial role in minimizing related harms
- Endorsement of "Towards a Culture of Moderation: Strategies for Reducing Alcohol Related Harm in Canada" produced by the Canadian Centre on Substance Abuse, Health Canada and the Alberta Drug and Alcohol Abuse Commission (7)
- Development of a comprehensive provincial strategy for combating hazardous alcohol use and related harms

Recommendation 2: *Alcohol consumers in British Columbia are informed of proven health and safety risks through clear messaging at liquor outlets and on alcohol containers*

At least 25 countries worldwide require some kind of warning labels on alcohol containers. Many health risks associated with drinking are not well known –for example that even low risk drinking slightly increases the risk of many forms of cancer. Recent research found that about 70% of Canadian consumers were unaware of the alcohol-cancer link (8). Research on warning labels in the US has shown they prompt conversations about health risks, are recalled best by those for whom the warnings are most relevant (i.e., heavy drinkers) and enjoy strong public support (9).

In Canada, warning labels on alcohol beverage containers are only required in the Yukon and Northwest Territories. In the US and some Canadian provinces (and municipalities), health warnings signs are mandated at point-of-sale in liquor stores and bars with requirements for size and placement to make these clear and visible.

In November 2011 the federal, provincial and territorial health ministers adopted national Low Risk Drinking Guidelines which recommend that women drink no more than 10 drinks per week and 3 drinks in any one day, while men drink no more than 15 drinks per week and 4 in any one day. CARBC research suggests most consumers are unaware of these guidelines and are unable to follow them because it is too hard to estimate the number of standard drinks contained in common bottles and cans of alcohol (10). CARBC research has shown that adding standard drink labels (e.g. for a 14% strength bottle of wine: “contains approx. 6.2 standard drinks”) overcomes this problem. Standard drink labels have been compulsory in Australia and New Zealand for a number of years.

We recommend the objective of better informing consumers is pursued through all practical means including using the Internet, point-of-sale messaging and clear labels on alcohol containers. This measure on its own will not change behaviour but it will help contribute towards a climate in which a "culture of moderation" is better understood and supported. Health messaging should not just focus on risks but provide practical advice on low risk levels of use and provide sufficient information for consumers to monitor their own consumption.

Specifically we recommend:

- Health warnings and messages on relevant government websites, at point-of-sale in liquor outlets and on all cans and bottles of alcoholic beverages
- Promotion of Canada’s Low Risk Drinking Guidelines through multiple media including point-of-sale and product labeling
- Addition of standard drink labels on all alcohol containers

Recommendation # 3: *Alcohol policy in British Columbia is carefully monitored and informed by best available evidence so that health and social costs are considered in addition to economic indicators*

Economists are divided on how best to estimate all the "indirect" costs of alcohol and other substance use on productivity, harm to nondrinkers, loss of income and overall impact on wellbeing. The consensus is that the total economic costs from alcohol misuse are large and were estimated at \$14.6 billion for Canada using 2002 data and dollar values (11). Using the most conservative approach of examining only direct costs to government, the Canadian Centre on Substance Abuse released a report which compared these direct costs with the direct revenues received for all provinces (12). Along with most provinces, the direct crime and health care costs for British Columbia were slightly higher than the revenues obtained, both approaching \$1 billion per annum.

The manufacturing and retail arms of the multifaceted alcohol industry provide substantial employment opportunities. It is worth noting, however, that when the hospitality and manufacturing sectors have an overreliance on the sale of alcohol there are also implications on the cost side. Furthermore, US economist Frank Chaloupka has recently shown that shrinking of jobs in the alcohol sector can be more than compensated by increased employment in more productive areas of the economy. The same analyses have been conducted in relation to the tobacco industry.

The first term of reference of the present Review is to maintain or increase government revenue, an objective that will be relatively easy to measure. The second term of reference – minimizing social and health consequences – is also measurable. For the past 8 years CARBC has collaborated with multiple partners including the BC Centre for Disease Control, the McCreary Centre for Adolescent Health, the Centre for Social Responsibility and academics at UBC, SFU and UNBC in developing a comprehensive alcohol and other drug monitoring and surveillance system (www.AODmonitoring.ca). With funding from different government ministries, health authorities, Health Canada and the Michael Smith Foundation the project has regularly reported key indicators for BC's 89 local health areas including: alcohol-related deaths and hospital admissions and per capita consumption. We have also analyzed how these indicators respond to changes in government policy, in particular looking at how the extent of privatization of the liquor market and changes in minimum alcohol prices influence the extent of alcohol-related harms (13), (14), (15), (16), (17).

We have drawn on international expertise and experience with such surveillance systems. We recommend that the public interest around alcohol be protected by a commitment to monitoring and publishing key indicators of alcohol-related harm. We further recommend, in keeping with the Review's terms of reference, that the best available published evidence be used to inform decision-making on liquor policies which have the capability of impacting the health, safety and well-being of

British Columbians. An assessment of the Province's performance using international standards about best practices was recently published by CARBC and the Centre for Addiction and Mental Health, Ontario (18). In this survey of 10 evidence-based policies, BC was assessed to be performing at 53% of its potential for minimizing consumption and harm.

Specifically we recommend:

- Adoption of a transparent set of indicators to enable government to monitor health and safety outcomes from alcohol use
- Use of high-quality international and Canadian reviews of the public health evidence to inform all government decisions related to alcohol policy (18), (6)

Recommendation #4: *Municipal governments and citizens should be able to make input to local decisions about how alcohol is made available in their communities*

There is clear and consistent evidence, accumulated over several decades, that the price and physical availability of alcohol influences its level of consumption and in turn the burden of associated health and social harms (6). The density of liquor outlets in a given geographic area, their hours of opening and their pricing policies in particular have a significant bearing on the health and social costs. However, the great majority of British Columbians expect convenient access to alcohol at reasonable prices. One way to help balance this community expectation against the inevitable social and health harms is to allow informed citizens and their elected representatives to have some influence to this balance at the local level.

The public safety consequences of alcohol misuse are often of concern to local residents. International research shows that a relatively small number of liquor outlets contribute the great majority of cases of alcohol-related violence (19). About 10% of bars and nightclubs generally contribute about 75% of assaults in and around licensed venues. In addition, impaired drivers are more likely to identify such premises as their last place of drinking. Police, who are responsible to local authorities, can routinely collect data on the last place of drinking of impaired drivers as well as monitor the location of incidence of night-time violence, much of which is alcohol-related. Such information can enable local authorities to tailor local regulation and enforcement so as to target the most high-risk venues.

It is important that provincial benchmarks are set for the density of liquor outlets, their hours of trading and minimum prices in order to address broad health and safety consequences of consumption, based on good analysis of statistical data. Local communities should also be empowered through access to local data and input from local citizens to introduce further more targeted restrictions where required. Several municipalities in BC currently impose minimum prices in bars and can vary local hours of operation for clubs and bars. The capacity to impose such measures serves an important public interest and should be preserved.

We specifically recommend:

- Providing municipal governments and police services with easy access to locally relevant data on public health and safety consequences of alcohol use
- Encouraging municipal governments and police services to collect and use local data including locations of alcohol-related violence and the last place of drinking of impaired drivers
- Engaging local citizens to make complaints to licensing authorities and municipal governments regarding neighbourhood disturbance and violence associated with licensed premises
- Giving municipal governments greater powers to determine local numbers of different types of liquor outlets, their hours of operation and pricing policies

Recommendation #5: *BC liquor policies are targeted so that the community is better protected against high-risk products*

There are at least 10,000 different alcoholic products available for sale in BC varying in terms of beverage type (beer, wine, spirits, coolers etc.), alcoholic strength, price, caffeine content and volume. The risk that each of these products will be consumed in a hazardous way is not equal. The products that pose the greatest risk to health and safety are high in alcohol content and low in price. Highly caffeinated alcoholic beverages add further to this risk (20). These risks are best measured by both (i) their price per standard drink and (ii) caffeine content per “standard drink”.

There is growing evidence that combining alcohol with caffeinated or other energy drinks increases risk of a range of acute problems including death from alcohol poisoning (20). It appears that adding stimulants to alcoholic beverages encourages people to drink for longer periods of time and thereby consume more and achieve higher blood alcohol levels. A further complication is that the stimulants appear to alter the drinker’s perception of the level of intoxication and give a false impression of being more in control of their reactions and behaviour than they actually are.

The research evidence shows quite clearly that even heavy drinkers are influenced by the price or availability of alcohol. In particular, the price of the cheapest alcohol most directly affects the heaviest alcohol consumers and local research shows that increases in BC minimum alcohol prices are associated with reductions in alcohol-related deaths and hospital admissions –both of which mostly involve heavier drinkers (21, 22). In Saskatchewan, increased minimum prices led to both reduced consumption and increased government revenues (22). Saskatchewan police also observed reductions in night-time disorder at the weekends after the measure was introduced. A report prepared by UK-based academics conservatively estimated that increasing minimum prices in BC to \$1.50 per standard drink would result in 1,346 fewer crimes being committed each year (23).

Comprehensive analyses of all relevant published articles show that a 10% increase in the price of all alcoholic drinks leads to a 4% to 5% reduction in their consumption (24). However, it is not necessary to increase prices across the board to obtain public health benefits. In BC, higher alcohol content drinks tend to be less expensive than their low alcohol content equivalents because the BC Liquor Distribution Board does not base prices on alcohol content (25). For example, a 7% strength cooler may be half the price per standard drink of a 5% cooler. Similarly for an 8% strength beer compared with one that contains just 4% alcohol. Following Canada's National Alcohol Strategy (7), we recommend that consumers be given price incentives to encourage consumption of lower alcohol content beverages. This can simultaneously address the first two key terms of reference of the Review (i.e., maintaining or increasing government revenue while reducing health and social harms).

Both minimum prices and markups of alcoholic beverages in BC have not kept up with inflation over the past three decades (18). Given the importance of price as a determinant of consumption and harm, we recommend minimum prices and markups are indexed to the cost of living and updated at least annually. We also recommend that this policy be set out in legislation as it is in Ontario so that prices are automatically indexed yearly.

We specifically recommend:

- Giving consumers price incentives to select low alcohol content drinks so as to maintain government revenue, protect profitability of the alcohol sector and improve health and safety outcomes
- Minimum prices be set to at least \$1.50 per standard drink in all liquor stores for all types of beverage and at \$3 per standard drink in bars, clubs and restaurants
- Setting all minimum prices and markups on alcoholic beverages to reflect their alcohol and caffeine content and that these be adjusted annually with the cost of living
- Restricting the caffeine content of alcoholic beverages for sale in BC to 30 mg per standard drink

Recommendation #6: *BC's partial government monopoly on the sale and distribution of alcohol is maintained and given an explicit public health and safety mandate*

There are a number of significant advantages from retaining the partial government alcohol monopoly in British Columbia that includes both revenue and public health considerations. Alcohol monopolies make it easier to control retail prices, hours of operation, outlet density, the legal drinking age and alcohol promotions – all factors which significantly influence patterns of consumption and levels of harm in the community (6). A CARBC survey of liquor store prices in 2010 demonstrated that private stores frequently undercut government minimum prices even though their

average prices were usually higher than those in government stores for the same product (26). The setting of minimum prices is a critical component of public health policy that is much easier to enforce when there is at least partial government ownership of the market.

Private liquor stores tend to have longer trading hours and are more efficient at stimulating demand for alcohol. Published studies have shown that across the 89 local health areas of British Columbia, increases in private liquor stores are significantly associated with increases in consumption (14), alcohol related hospital admissions (21) and deaths(13). By contrast, government liquor stores were associated with lower local levels of consumption and harm.

Local "mystery shopper" programs in BC have consistently shown that checking of age ID is done far more frequently in government owned than private liquor stores. Studies from several other countries confirm this finding and recent experience with privatization in the neighbouring state of Washington has demonstrated a dramatic increase in thefts of alcohol by underage drinkers from corner stores.

Finally, a recent comprehensive analysis of the impacts of privatization in the US by the Research on Labor, Employment, and the Economy at the University of Michigan has shown that privatization was significantly linked with increased consumption, greater road fatalities and reduced government revenues (27). The main two objectives of the present Review –maintaining or increasing government revenue while minimizing health and social harms –are therefore best met through maintaining government ownership over the control and sale of alcohol.

The recent evaluation of BC's performance with the implementation of effective public health policies around alcohol by CARBC and CAMH shows that in practice only 53% of the potential benefits are being achieved (18). We recommend that public health and safety objectives be given much higher priority in the operations of liquor control and licensing in the province.

Specifically we recommend:

- Maintaining the present moratorium on private liquor store licenses till 2020
- Giving clear mandates to both the liquor licensing and liquor distribution arms of government to minimize the adverse health and safety consequences of alcohol consumption
- Using indicators of responsible alcohol use in directing the operations of the liquor distribution branch including targets for sales of lower versus higher strength products and enforcement of minimum prices per standard drink across the entire liquor distribution system

Conclusion

We conclude by expressing the hope that the forthcoming update of BC's liquor laws will be guided by an explicit acknowledgement of the public health, public safety and economic costs associated with alcohol consumption and a commitment to using best available evidence to create modern laws and regulations capable of minimizing these harms. Ensuring that information about the costs as well as benefits of alcohol consumption is transparently collected, reported and used in policy decisions is the best way to ensure the public interest is served.

References *(Hard copies provided as an Addendum)*

1. Centre for Addictions Research of BC. Annual Report, 2012-2013. Victoria, BC: Centre for Addictions Research of BC, University of Victoria, 2012-2013 2013. Report No.
2. Alcohol and Other Drug Monitoring Project. Number of Alcohol Attributable Hospital Admissions and Deaths in BC, 2002-20112013.
3. BC Alcohol and Other Drug Monitoring Project. Alcohol-related deaths in British Columbia, 2002-20112013. Available from: [http://carbc.ca/Portals/0/AOD/HospitalizationsDeaths/Alcohol-related deaths in bc 2002-2011.pdf](http://carbc.ca/Portals/0/AOD/HospitalizationsDeaths/Alcohol-related%20deaths%20in%20bc%202002-2011.pdf).
4. International Agency for Research on Cancer. Biennial Report 2008/2009. IARC Monographs. Lyon: IARC: 2010.
5. Fitterer J. Alcohol-attributable crime in British Columbia. Victoria, BC: Centre for Addictions Research of BC, University of Victoria, 2013.
6. Babor TF, Caetano R, Casswell S, Edwards G, Giesbrecht N, Graham K, et al. Alcohol: No Ordinary Commodity: Research and Public Policy: Research and Public Policy: OUP Oxford; 2010.
7. National Alcohol Strategy Working Group. Reducing alcohol-related harm in Canada: toward a culture moderation - synopsis of a proposed national alcohol strategy. Ottawa: Canadian Centre on Substance Abuse. Available from URL: http://www.nationalframework-cadrenational.ca/uploads/files/FINAL_NAS_EN_April3_07.pdf. Accessible January 10, 2012, 2007 12-13 March 2007. Report No.
8. The Canadian Partnership Against Cancer. Alcohol Use and Cancer in Canada. Toronto, ON: The Canadian Partnership Against Cancer, 2011.
9. Thomas G GG, Poole N & Cook, J. . The effectiveness of alcohol warning labels in the prevention of FASD: A brief review. International Journal of Alcohol & Drug Research In press.
10. Osioy M, Stockwell, T., & Zhao, J. How much did you actually drink last night? The effect of standard drink labelling on an alcohol estimation task. Victoria, BC: Centre for Addictions Research of BC, University of Victoria, 2013.
11. Rehm J, Baliunas D, Brochu S, Fischer B, Gnam WH, Patra J, et al. In collaboration with E. Adlaf, M. Recel, E. Single and the members of the steering committeeThe cost of substance abuse in Canada 2002. Ottawa: Canadian Centre on Substance Abuse. Available from URL:

http://koalicija.org/serveris/Metod_liter/Cost_of_substance_abuse_in_Canada_2002.pdf. Accessible 30 April 2012, 2006.

12. Thomas G. Analysis of Beverage Alcohol Sales in Canada. Ottawa, ON: Canadian Centre on Substance Abuse, 2012.
13. Zhao J, Stockwell T, Martin G, Macdonald S, Vallance K, Treno A, et al. The relationship between minimum alcohol prices, outlet densities and alcohol-attributable deaths in British Columbia, 2002–09. *Addiction*. 2013;108(6):1059-69.
14. Stockwell T, Zhao J, Macdonald S, Pakula B, Gruenewald P, Holder H. Changes in per capita alcohol sales during the partial privatization of British Columbia's retail alcohol monopoly 2003-2008: a multi-level local area analysis. *Addiction*. 2009 Nov;104(11):1827-36. PubMed PMID: 19681801. Epub 2009/08/18. eng.
15. Treno A, Ponicki W, Stockwell T, Macdonald S, Gruenewald P, Zhao J, et al. Alcohol Outlet Densities and Alcohol Price: The British Columbia Experiment in the Partial Privatization of Alcohol Sales Off-Premise. *Alcoholism: Clinical and Experimental Research*. *Alcoholism: Clinical and Experimental Research*. 2012 May 2013;37(5):854-9.
16. Stockwell T, Zhao JH, Macdonald S, Vallance K, Gruenewald P, Ponicki W, et al. Impact on alcohol-related mortality of a rapid rise in the density of private liquor outlets in British Columbia: a local area multi-level analysis. *Addiction*. 2011 Apr;106(4):768-76. PubMed PMID: ISI:000287967000012. English.
17. Stockwell T, Auld MC, Zhao J, Martin G. Does minimum pricing reduce alcohol consumption? The experience of a Canadian province. *Addiction*. 2012;107(5):912-20.
18. Thompson K, Stockwell, T., Vallance, K., Giesbrecht, N., & Wettlaufer, A., . Reducing Alcohol-Related Harms and Costs in British Columbia: A Provincial Summary Report. Victoria, BC: Centre for Addictions Research of BC, University of Victoria, 2013 August 2013. Report No.
19. Stockwell T. Operator and Regulatory Best Practices in the Reduction of Violence in and Around Licensed Premises: A Review of Australian and Canadian Research Victoria, BC: Centre for Addictions Research of BC; 2010. Available from: <http://www.carbc.ca/Portals/0/PropertyAgent/558/Files/15/Alcohol&Violence.pdf>.
20. Brache K, Thomas, G., & Stockwell, T. Caffeinated Alcoholic Beverages in Canada: Prevalence of Use, Risks and Recommended Policy Responses. Ottawa, ON: Canadian Centre on Substance Abuse, 2012.
21. Stockwell T, Zhao J, Martin G, Macdonald S, Vallance K, Treno A, et al. Minimum alcohol prices and outlet densities in British Columbia, Canada: Estimated impacts on alcohol attributable hospitalisations. *Am J Public Health*. 2013:e1-e7. Epub April 18, 2013.
22. Stockwell T, Zhao J, Giesbrecht N, Macdonald S, Thomas G, Wettlaufer A. The raising of minimum alcohol prices in Saskatchewan, Canada: impacts on consumption and implications for public health. *Am J Public Health*. 2012 Dec;102(12):e103-10. PubMed PMID: 23078488. Epub 2012/10/20. eng.
23. Brennan A, Stockwell, T., Hill-McManus, D., Giesbrecht, N., Thomas, G., Zhao, J., Martin, G., & Wettlaufer, A. Model-based appraisal of alcohol minimum pricing in

Ontario and British Columbia. Victoria, BC: Centre for Addictions Research of BC, University of Victoria, 2012.

24. Wagenaar AC, Tobler AL, Komro KA. Effects of Alcohol Tax and Price Policies on Morbidity and Mortality: A Systematic Review. *Am J Public Health*. 2010 Nov;100(11):2270-8. PubMed PMID: ISI:000283807600051. English.

25. Zhao JM, G. and Stockwell, T. Market share of alcohol products and price incentives. 2013. Centre for addictions Research of BC, University of Victoria, BC. <http://www.carbc.ca/Portals/0/PropertyAgent/558/Files/343/PriceIncentive.pdf>

26. Stockwell T, Vallance K, Martin G, Macdonald S, Ivsins A, Chow C, et al. The price of getting high, stoned and drunk in BC: A comparison of minimum prices for alcohol and other psychoactive substances. Victoria, British Columbia: University of Victoria. Available from URL:

http://www.carbc.ca/Portals/0/PropertyAgent/2111/Files/385/CARBC_Bulletin7.pdf. Accessible 9 May 2011, 2010.

27. Zullo R, Bi, X., Xiaohan, Y. & Siddiqui, Z. The Fiscal and Social Effects of State Alcohol Control Systems. Ann Arbor, MI: University of Michigan, 2013 May 2013. Report No.