

# Regulatory Options to Prevent the Unsafe Use of High-powered Hydroponic Equipment



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## Executive Summary

1. Both hobbyist gardeners and criminals who cultivate marihuana use the same types of high-powered hydroponic equipment in a residential setting, with no monitoring by authorities. The equipment's power requirements (e.g., 1,000-watt bulbs and transformers) exceed a typical home's electrical capacity, and therefore require professional installation. However, due to a lack of regulation, this installation is generally undertaken by amateurs and work is most frequently done without the necessary permits or licences.
2. Research has established a connection between the prevalence of hydroponic equipment vendors and the number of marihuana grow operations (MGOs) within a jurisdiction. British Columbia has more grow operations than neighbouring Alberta and Washington, and also has far more hydroponics equipment vendors per capita. It is expected that regulating these specialty vendors would have an impact on the illegal marihuana cultivation trade.
3. Most of British Columbia's MGOs are hydroponic outfits that surreptitiously operate in residential neighbourhoods. Public safety hazards include electrical and fire hazards related to the typically unsafe and illegal wiring practices, unsafe and illegal structural alterations to the building to accommodate the wiring and venting, mould and chemical exposure, and potential site contamination to surrounding ground water.
4. Several regulatory solutions may help prevent the unsafe use of hydroponic equipment in B.C. homes, while also serving as a deterrent for illegal MGOs. These include amendments to the *Canada Consumer Product Safety Act*, adoption of municipal bylaws that enables municipalities to regulate the sale and use of high-powered hydroponic equipment, and federally-mandated licensing of hydroponic equipment retailers and/or end-use certificates and proof of identity from purchasers of the equipment.

## The Purpose of this Research

The purpose of this research is to:

1. Draw attention to the ongoing public safety threat associated with the unsupervised and unsafe installation and use of hydroponics equipment in homes in British Columbia for growing marihuana along with legal crops such as flowers and vegetables.
2. Outline regulatory options for ensuring hydroponics equipment is installed and used safely and legally in B.C. homes.

## Background

High-powered hydroponics equipment, such as high-watt grow lamps and electrical transformers, are being used in homes across B.C. to grow everything from marihuana to orchids and tomatoes. Whether the crop is legal or not, this equipment requires professional, permitted installation because it exceeds a typical home's electrical capacity. Due to a lack of regulation, however, hydroponics equipment is typically installed by amateur gardeners or criminals setting up a marihuana grow operation (MGO), and as a result poses a safety threat to the home's occupants as well as neighbours and emergency responders.

Increased regulation of hydroponic equipment would help reduce this safety threat while also helping deter criminals from using the equipment to grow marihuana.

## Hydroponic Equipment and Uses

Hydroponic equipment is used to grow plants indoors in water or another medium rather than soil. All necessary nutrients and artificial light is provided for the plants' photosynthesis process. Hydroponic methods are used both for legal purposes (e.g. to grow medical marihuana, flowers and vegetables) as well as in residential MGOs. Most marihuana in B.C. is grown hydroponically [1: 4].

The equipment can be obtained from specialty hydroponic shops and online stores, in addition to building supply, hardware and department stores. Common equipment includes [1: 5-6]:

- Lights – primarily 1,000-watt high density discharge (HID) lights, although 500-watt lights can be used.
- Transformers (ballasts) – primarily 1,000-watt transformers used for 1,000-watt HID lights (each light requires a transformer, which is the light's power supply).
- Assorted other equipment including timers (regulate light exposure) and, in illegal MGOs, CO2 generators for power production along with ventilation and odour-scrubbing equipment.

The following trends were revealed by an audit completed in May 2007 of the equipment seized by police in B.C. from 284 MGOs [2: 2]:

- Timers were seized in 89% of cases.
- Lights were seized in 55% of cases (93% were 1,000-watt lamps).
- Transformers (ballasts) were seized in 83% of cases.
- CO2 generators were seized in 16% of cases.

- Ozone generators were seized in 2% of cases.

It should be noted that 1,000-watt HID lights or transformers are not typically found in residential structures. Consideration of any new regulation for hydroponic equipment would require a definition of the specific types of equipment that would be targeted. For example, the South Australian State Government, when considering a proposal to license hydroponic equipment retailers [3], focused on electrical lighting systems that used lights of 250 watts or more, fluorescent lights (grolux lamps) and HID lamps, control gear, ballasts, lamp mounts and reflectors (or ballast boxes), because these items “were considered to be essential for growing cannabis indoors and would restrict the impact of the licensing proposal to the smallest range of retailers.”

### *Link between Hydroponic Shops and MGOs*

Research has illustrated a connection between the number of hydroponic equipment stores in a jurisdiction and the prevalence of MGOs. Bauman [4: pg 8-9] showed that B.C. has significantly more hydroponic shops per capita than its neighbours Alberta or Washington state, as well as more MGOs. Bauman also showed that as the number of MGOs has risen in Alberta and Washington over time, so too has the number of hydroponics retailers.

Table 1(a), below, illustrates a review of online advertising for hydroponic shops in B.C., Alberta and Washington state<sup>1</sup>. Although B.C. has approximately 31% of the combined area’s population, it had 74 (59%) of the combined area’s hydroponic shops when the review was conducted in October 2012.

Table 1(b) also shows a reduction in hydroponic shops between 2002 and 2012 in the Lower Mainland. This is consistent with a shift of marihuana production from the Lower Mainland to other parts of the province starting in 2005, when communities in the Lower Mainland began to initiate proactive public safety inspections of suspected residential MGOs.

Given the link between hydroponics shops and MGOs, it is expected that regulation of hydroponic shops would be a deterrent to growing marihuana illegally in a residential setting.

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<sup>1</sup> The data was derived from Superpages.com (Yellowpages.com) and Yellowpages.ca listings for B.C., Alberta and Washington state. A search was conducted using the search criteria “Hydroponic Equipment and Supplies.” The number represents the total number of businesses identified during the search, not the number of listings (some businesses have multiple listings).



**TABLE 1. (A) 2012 COMPARISON FOR HYDROPONICS SHOPS IN BC, AB, AND WA STATE AND (B) REGIONAL BREAKDOWN OF HYDROPONICS SHOPS IN BC**

(A)	2002	2006	Spring 2008	Dec. 2008	Mar. 2009	Dec. 2009	Jan. 2011	Oct. 2012	2002- 2006 % Inc/Dec	2006- 2008 % Inc/Dec	Spring- Dec 2008 % Inc/Dec	Dec. 2008- Mar. 2009 % Inc/Dec	Mar- Dec. 2009 % Inc/Dec	Dec 2009 - Jan 2011 % Inc/Dec	Jan 2011 - Oct 2012 % Inc/Dec	2002-Oct. 2012 % Total Change
Alberta	13	16	11	12	11	8	8	7	23.1%	-31.3%	9.1%	-8.3%	-27.3%	0.0%	-12.5%	-46.2%
Washington British Columbia	9	18	20	15	16	20	26	45	100.0%	11.1%	-25.0%	6.7%	25.0%	30.0%	73.1%	400.0%
Columbia	101	99	81	78	75	72	69	74	-2.0%	-18.2%	-3.7%	-3.8%	-4.0%	-4.2%	7.2%	-26.7%

(B)	2002	2006	Spring 2008	Dec. 2008	Mar. 2009	Dec. 2009	Jan. 2011	Oct. 2012	2002- 2006 % Inc/Dec	2006- 2008 % Inc/Dec	Spring- Dec 2008 % Inc/Dec	Dec. 2008- Mar. 2009 % Inc/Dec	Mar- Dec. 2009 % Inc/Dec	Dec 2009 - Jan 2011 % Inc/Dec	Jan 2011 - Oct 2012 % Inc/Dec	2002-Oct. 2012 % Total Change
Lower Mainland Vancouver Island	55	48	34	34	33	29	27	27	-12.7%	-29.2%	0.0%	-2.9%	-12.1%	-6.9%	0.0%	-50.9%
Interior	16	15	13	14	13	13	12	16	-6.3%	-13.3%	7.7%	-7.1%	0.0%	-7.7%	33.3%	0.0%
Northern BC	13	16	20	16	15	14	14	17	23.1%	25.0%	-20.0%	-6.3%	-6.7%	0.0%	21.4%	30.8%
Kootenays	7	9	6	6	7	7	7	7	28.6%	-33.3%	0.0%	16.7%	0.0%	0.0%	0.0%	0.0%
Kootenays	8	11	8	8	7	8	8	5	37.5%	-27.3%	0.0%	-12.5%	14.3%	0.0%	-37.5%	-37.5%
Sunshine Coast	2	0	0	0	0	1	1	2	-100.0%				100.0%	0.0%	100.0%	0.0%
<b>Total</b>	<b>101</b>	<b>99</b>	<b>81</b>	<b>78</b>	<b>75</b>	<b>72</b>	<b>69</b>	<b>74</b>								

## Health and Safety Risks

Garis [1: 6-7] notes the unique public safety hazards related to hydroponic MGOs because they are frequently located in residential neighbourhoods and exist in close proximity to people who are unaware of their existence or the threat they pose.

### *Electrical and Fire Hazards*

Electricity fuels the high-powered hydroponic equipment as well as fans, pumps and other electrical devices. MGOs' typically unsafe, unapproved wiring practices bring a significant fire and electrocution risk to occupants, neighbours and emergency responders. These risks can outlast the grow operation activity in the dwelling, as they are often inherited by an unsuspecting new owner or tenant when the MGO has been dismantled and the property is sold or rented.

Noted electrical hazards include:

- Unsafe electrical practices such as open wiring and lack of fuses;
- Crudely-made bypasses that can electrify a conduit, which (if connected to a home's ground rod) could electrify the surrounding ground up to 10 metres away;
- Tripping, shock and fire hazards due to poor installation; and
- Overloaded electrical circuits that could cause short circuits and electrify adjacent metal.

These hazards contribute to a significantly increased risk of fire. Residential MGOs are 24 times more likely to catch fire than a typical home.

### *Structural Hazards*

Illegal and unsafe structural alterations are often made to accommodate the wiring and venting. This affects both the structural integrity and fire safety of the building.

### *Other*

Other hazards associated with MGOs include exposure to mould and chemicals, explosions, and booby traps.

## Regulatory Options

Several regulatory solutions may help prevent the unsafe and illegal use of hydroponic equipment in B.C. homes.

### *Consumer Protection Legislation Amendment*

Garis and Clare [2: 4] suggest amendments to the *Canada Consumer Product Safety Act* (the Act) on the basis that the Act provides a platform for controlling access to consumer products that pose an unreasonable danger to human health and safety. The Act does not currently prohibit the sale of high-powered hydroponic equipment. The following outlines the case made by Garis and Clare:

1. The Minister may request the manufacturers, importers and retailers of the products to undertake research to obtain information the Ministry considers necessary to verify compliance or prevent non-

compliance with the Act. In this case, compliance would depend on whether the products were deemed to pose an unreasonable danger (existing or potential) to human health or safety. Focusing on non-commercial uses would prevent any impact on legitimate commercial purchasers.

2. Potential research could be conducted into the health and safety risks through end-user monitoring, made possible by collecting customer information and examining the installations after purchase. This type of information-gathering is consistent with the intent of current reporting practices. For example, retailers are obliged to maintain documents indicating the name and address of the person from whom they obtain products, and where and when products are sold. Other members of the distribution chain are also required to retain documentation about where products are obtained and sold. Additionally, manufacturers, importers and retailers are already required to provide the Minister with information about any health and safety incidents that occur involving products they distribute.
3. The feasibility of combining such a process with the requirement for citizens to obtain some form of pre-approval for purchasing this equipment could also be explored.

### *Municipal Bylaw*

In 2010, the Fire Chiefs' Association of BC provided funding for legal advice and the development of a model bylaw that would leverage existing Community Charter and Safety Standards Act provisions to give municipalities a tool to ensure hydroponic equipment is only used in a safe and legal manner in their jurisdiction. Garis [2: 9] notes:

*"It is not unusual for cities to regulate the sale of items deemed to be public safety hazards. For example, many Lower Mainland municipalities have introduced fireworks bylaws that regulate the sale and use of fireworks. Like the proposed municipal regulation of hydroponics equipment sales, fireworks bylaws impact both vendors and consumers in the interest of protecting the public from a known safety hazard."*

The model bylaw places the onus on users to obtain the proper permit in order to purchase lights and transformers greater than 500 watts. However, due to the regulatory powers available to municipalities, the focus of the bylaw is on the vendors who sell this equipment. Garis outlines the process as follows [2: 9]:

- Vendors within the municipality cannot sell lamps or transformers rated greater than 500 watts unless the buyer presents a permit issued in their name.
- The permit must be either a valid electrical installation permit or operating permit issued under the Electrical Safety Regulations of the Safety Standards Act.
- Vendors must record the sale and permit information, and maintain the record for inspection by the municipality.
- The municipality can only use the information to ensure the buyers had a valid permit – not to bring proceedings against the buyer.

The legal opinion obtained for the development of the bylaw concludes that the general regulatory and business regulation powers provided in the Community Charter contain sufficient authority for such a bylaw. It also concluded that the Safety Standards Act would not interfere with the authority of a municipality to adopt and enforce the model bylaw, and that the bylaw adheres to existing provisions:

- The Safety Standards General Regulation (Section 27(1)) requires individuals to obtain a permit to undertake regulated work or use a regulated product. This includes the requirement for an electrical installation permit to install hydroponics equipment in a residential setting, since the equipment's electrical requirements may exceed normal residential use.
- The Safety Standards General Regulation (Section 19 (1)(b)) specifies that an operating permit is required to operate a regulated product. BC Safety Authority Directive No. D-E3 070801 7 requires operating permits for sites where the electrical supply is more than 250 kVA (kilovolt amps). These would include legitimate non-residential users of HID lights such as warehouses, shopping malls, schools and greenhouses.

Further, the bylaw is in keeping with municipal electrical bylaws that typically outline penalties for those who have not obtained the necessary permit for electrical work [2: 10].

Development of the model bylaw was also influenced by the B.C. Court of Appeal judgment in *Royal City Jewellers & Loans Ltd. v. New Westminster (City)*, regarding the use of data collected under the City of New Westminster's pawnshop bylaw [2: 11]. The legal opinion concluded that the model bylaw would be defensible in court based on the broader powers conferred on municipalities by the Community Charter, and because its focus is on preventing the vendor from facilitating the commission of an unlawful act in the interest of public safety.

The model bylaw would not prevent hydroponic gardeners from legally purchasing, installing or using the equipment. Rather, it would require the installation of hydroponic equipment in a residential setting to be completed by permit, so merely ensures enforcement of an existing requirement in the *Safety Standards Act*. Legitimate non-residential users of HID lights who obtain operating permits as required by the Electrical Safety Regulation would need only produce this permit to purchase additional lights and ballasts. In terms of the vendors of these products, the model bylaw protects them from unwittingly abetting the commission of an offense under the Safety Standards Act by the buyer.

### *Consumer and Retailer Licensing*

In 2002, the South Australia State Government considered the viability of implementing licensing requirements for hydroponic retailers and end-use certificates / proof of identity for purchasers of hydroponic equipment [3].

The licensing option [3: 31] would require vendors of hydroponic equipment to be licensed, to pass a police integrity test to demonstrate they are persons of good repute (e.g., do not have a criminal record, associate with known criminals, or be known for growing marihuana), and to obtain adequate identification and an end-use certificate from those who buy hydroponic equipment. The proposal targeted specialty hydroponic retailers, which were seen by the South Australian police force to have connections with the marihuana trade. It was not intended to affect wholesalers or manufacturers.

The end-user certificates option [3: 40] would require sellers of hydroponic equipment to obtain a signed end-use certificate from the purchaser about the equipment sold, and to obtain proof of the purchaser's identity in order to verify the name and address provided in the end-use certificate. The intention was to deter customers from buying hydroponic equipment for the purpose of growing marihuana, and to allow the South Australian police force to analyze buying patterns and investigate particular customers if marihuana production is suspected.



Ultimately, the review panel recommended negative licensing [3: 51]. With this system, legislation prescribes conditions for who may or may not operate within a specific market (e.g., it may prohibit those who have been convicted of certain offenses), and it becomes an offense to operate in breach of conditions. Individual providers are responsible for ensuring they comply with the requirements. Customer complaints are generally how those who breach negative licensing are discovered.

The review panel also recommended that under any scheme to regulate hydroponic equipment retailers, it would be an offence to sell such equipment knowing the customer intended to use it for the illegal production of marijuana. [3: 62}

While the panel had rejected the notion of licensing retailers and end-user certificates and proof of identity on the basis that the costs outweigh the benefits, Garis and Clare [2, 5] suggest these approaches be explored in B.C., given the legislative variations between Australia and Canada and the extent to which hydroponic equipment poses health and safety risks.

Garis and Clare [2: 5] also discuss the potential for this type of federally legislated approach to operate in conjunction with other laws, such as Section 436 of the Criminal Code of Canada (arson by negligence) and the proposed improvements to Health Canada's Marijuana Medical Access Program, which would prohibit the distribution of individual licenses to produce marijuana. "Regulation at a federal level would provide the ideal, unified approach to combating the health and safety risks that currently exist as a consequence of the dangerous use of high-powered hydroponic equipment."

## Conclusion

The current lack of regulation of the sale and use of high-powered hydroponic equipment is hiding a significant safety risk from the oversight of authorities and is therefore endangering the public. Whether introduced at a local or upper government level, regulation of either the sale or use of this equipment would help ensure this equipment is installed safely and legally in B.C. homes while also serving to deter the illegal cultivation of marijuana in residential settings.

## References

- [1] Len Garis, *Ensuring the Safe Use of Hydroponics Equipment – a Model Bylaw*, April 2010, Fire Chiefs' Association of British Columbia
- [2] Len Garis and Joseph Clare, *Exploring the Scope for the Amended Canada Consumer Product Safety Act to Prevent Unsafe Use of Hydroponic Equipment*, November 2012, University of the Fraser Valley, School of Criminology
- [3] Government of South Australia, *National competition policy review - proposal to licence hydroponic equipment retailers: report of the review panel.*, 2002, Government of South Australia: Adelaide.
- [4] D. Bauman, D. Plecas, W. Taylor, P. Neal and N. Huitson, *Revisiting Hydroponic Cultivation Equipment Outlets in British Columbia, Alberta and Washington State*, December 2006, University of the Fraser Valley, School of Criminology and Criminal Justice

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