Merging safely: addressing blind spots to fire hazards in the proposed framework for the legalization and regulation of Cannabis

Submission to Health Canada

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Executive Summary

Founded in 1909, the Canadian Association of Fire Chiefs (CAFC) is an independent, non-profit organization representing approximately 3,500 fire departments across Canada. The primary mission of CAFC is to promote the highest standard of public safety in an ever changing and increasingly complex world to ensure the protection of the public through leadership, advocacy and active collaboration with key stakeholders. For contact and other information please visit www.cafc.ca .

The Canadian Association of Fire Chiefs (CAFC) commends the Federal Government for consulting on the proposed framework for the legalization and regulation of Cannabis. We applaud proactive measures to get the framework and regulations right. We appreciate the opportunity to voice views from the fire service on this complex issue. Our submission will respond to question 12 of the question set provided for this consultation regarding issues not covered in the document.

In our view, the framework appears to be dangerously silent on the expectations related to fire safety. We believe this is a blind spot. We urge Health Canada to re-consider this. Growing Cannabis comes with fire hazards. We've learned this from the documented experiences and standards of our colleagues in the United States, particularly in Colorado where this issue has been studied extensively. The experiences in Colorado were used as a baseline for lessons that spread across the US and through the National Fire Protection Association (NFPA), resulting in a new chapter of the NFPA's Fire Code which is now under review and will likely be approved this year. Similarly, the legalization of Cannabis will also affect the Building and Fire Code in Canada, a process that is already very complex. It may be best if the Federal Government takes proactive measures on such issues through the legislation and regulation of Cannabis.

Specific issues that need to be considered can be gleaned from the NFPA 1 – Fire Code which, in its most recent edition has added a new chapter (Chapter 38 - Marijuana Growing, Processing, or Extraction Facilities), as well as guidance documents that Canadian municipalities are preparing. The NFPA chapter acknowledges issues that are covered in other parts of the code, but also highlights new areas specific to Cannabis. These include considerations around explosion conditions, fumigation, automatic sprinkler systems, automatic emergency power systems, hazardous materials, exhaust, fumes, carbon dioxide emission, flammable and combustible liquid extraction systems, inspection and education.

While this can be created and written in concept, it also results in additional education, inspection and resource costs to fire departments. In some cases, several additional staff will be required. It's important that this federal decision be accompanied by the resources municipalities will need to cover the consequences for fire departments.

Finally, we reiterate the position that the CAFC made in 2016. Research has shown that it is both dangerous and unnecessary for Cannabis to be grown in residential units, even if it is done legally. In our submission, we will review the evidence that we provided previously.

In summary, our recommendations, which we elaborate upon in this document include the following:

1. Expand the legislative and regulatory framework to consider Building and Fire Code issues up front
2. Expand the definition of physical safety to go beyond theft and include fire
3. Provide municipalities with funds to offset additional fire department education, inspection and needed resources incurred through this decision
4. Require mandatory reporting of Cannabis related fires in the Cannabis tracking system
5. Prohibit the growth of Cannabis in all residential buildings

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Introduction

Tragically, fire departments often respond to emergencies that should never have happened: unsafe cooking practices, missing or disabled smoke alarms sprinkler systems, makeshift heating systems and others. First responders put their lives on the line without judgement when emergencies happen. However, we know that both victims and responders would prefer it otherwise. Prevention is better than response. It is with this in mind that the CAFC would like to encourage the Federal Government to give greater consideration to fire safety in its framework for the legalization and regulation of Cannabis. We appreciate the opportunity to partake.

As you might expect by the title of our submission, we will focus on question 12 about items not covered in the framework. In the first part of this submission we will present some contextual considerations that our colleagues in the United States have experienced as they move the Cannabis industry from the "basement to the boardroom". In the second part of this submission, we will discuss a number of specific considerations. Third, we will reiterate our 2016 position that Cannabis should not be grown in residential buildings and review the evidence that has been generated to this effect. We will conclude with five recommendations.

Current context

The Canadian Government is charting new territory in the legalization of Cannabis. Fortunately, in the United States several states have already done this, providing us with a great deal of information on what we need to do maximize safety in a complex and risk laden area of public policy. To this effect, the National Fire Protection Association (NFPA), a global nonprofit organization, established in 1896, devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards, has developed a chapter of its fire code (Chapter 38 - Marijuana Growing, Processing, or Extraction Facilities) to respond to concerns regarding fire safety as it pertains to the legalization of Cannabis.

It is important to note that this chapter was approved, as a part of NFPA 1 – Fire Code as a national standard in the U.S. on September 6, 2017, which took several years to come about since Colorado (the first state in the U.S. to do so), legalized the production of Cannabis in 2010. In this regard, the new chapter in the fire code acknowledges that many aspects of Cannabis related to fire safety are similar to requirements in many other part of the codes, for example, requirements for egress and fire protection systems. However, there are many new sections because of the specifics of Cannabis production. These are also echoed in positions that are being put out by Canadian Municipal positions (see as example from Prince Albert which is being circulated across SK).

This is particularly important to consider in Canada because our building and fire code process is complex. In order for changes to be made to the national building or fire code, rigorous applications with justification of the problem and solution must be generated, debated and discussed. The process is a dance or debate that balances safety and economic considerations. Unfortunately, industry and academia have the capacity to generate these applications much more forcefully than the fire service because the fire service is not mandated or resourced to conduct the research needed to substantiate our building and fire code requests. To address the asymmetry in capacity to influence building code changes between the fire service and industry, we have asked the Federal Government for a $50M/year research fund that would allow us to generate the evidence needed for existing issues.

If we are going to introduce new complexities and economic interests, let's get this right from the start. We believe there have to be special provisions in the legislation and regulations to ensure that the Building and

Fire Code are appropriately addressed when it comes to Cannabis safety. We will speak to some specifics later in the submission.

Further, our colleagues south of the border who have already experienced challenges with these processes have indicated clearly that when it comes to inspection and education, there are certainly increased costs on fire departments, volunteer, composite and career, and the municipalities that fund them. We don't need to further increase the strain on resources. The cost of Cannabis regulation and legalization should be offset by economic returns and we need the appropriate cost and revenue sharing between the level of governments to make sure that first responders don't end up bearing the brunt of safety issues that should have been addressed either in the legislation or through adequate resource consideration. It's important to keep in mind that most fire departments run on volunteer resources. When we increase the costs, we are already dipping into an under-resourced sector.

Specific fire related issues

While the CAFC has a building codes committee that would be pleased to assist the Federal Government with fire specific considerations for the framework if desired. Based on current NFPA documents and publications from the U.S., we are able to provide a brief overview of some of the issues that can be expected. It should be noted that research has shown that legalization itself is not automatically correlated to appropriate code adherence. In other words, code violations where they exist can happen in both legal and illegal growing facilities. We know this from both the experience with medicinal marijuana and from the legalization that has already taken place in the U.S. Below is an outline as described in an article by Lukua (2017).

1. **Approvals:** Fire services need to be made aware as soon as possible of the application and details of proposed Cannabis production facilities and be fully engaged with all dialogue surrounding the approval of these facilities.
2. **Retrospective changes to the building and fire code:** It was reported that in Colorado it was difficult in Colorado to get compliance to the Fire Code after the Cannabis regulations were in place. it would be better to build fire and building code regulations into the Cannabis regulations prior to their adoption.
3. **Egress:** While Egress is already addressed in the NFPA Fire Code, It was the experience in Colorado that dead bolted or electronically secured doors were often the main source of fire code violations.
4. **Labs:** Gas chromatography used in Cannabis labs are shown to emit hazardous materials. This is an area that needs to be addressed proactively.
5. **Unique greenhouse hazards:** Growing Cannabis produces hazards that are different from standard vegetable greenhouses because of high electric demand for grow lamps, fumigation operations, carbon dioxide (CO_2) enrichment, and maze-like room layouts with different ceiling heights to accommodate plants at different stages.
6. **Impacts on neighbouring buildings:** Cannabis is often grown in warehouses near tenanted buildings and can have implications for smells and fumes. We will discuss the problems of Cannabis in residences later in the submission.
7. **Number of individuals in facility:** Growing Cannabis is labor intensive often requiring staffing shifts that run around the clock. As such, the occupant load of workers can be higher than one might expect in a typical U occupancy greenhouse.
8. **Sprinklers:** Sprinklers are already an issue of debate in Canada. Many believe it should be in all new builds. In Colorado, occupancies of more than 12,000 square feet are required to be sprinkler-ed. Occupancies without sprinklers should be subject to the opening requirements every 50 lineal feet so a defensive fire attack can be initiated if necessary.
9. **Intermodal box containers (IBCs):** Use of these IBC containers falls under the same building and fire code requirements for occupancy classification, egress door hardware, and sprinkler-ing of the containers if the building is required to be sprinkler-ed. It has been observed as an issue with Cannabis growing.

10. **Fire Inspection:** Growing Cannabis requires additional fire inspection standards. Fire inspectors along with municipal building officials need to ensure that all construction permits, including electrical permits, have been obtained and final inspections have been conducted prior to allowing occupancy of any new business.
11. **Electrical demands:** Fires have occurred as a result of the melting of the overhead electrical service used for the 1000W lamps needed for growing. The experience in Colorado was that although the inside electrical system was sized correctly and inspected, the electric utility service from the transformer was never upgraded.
12. **Space demands:** Colorado observed the progression from warehouses to vertical plant growing on tiers of storage racks up to 30 feet in height. This may need to be assessed as high pile storage.
13. **CO_2 Enrichment:** CO_2 enrichment systems found in marijuana grow rooms are often three times as high as other growth buildings to intentionally flood the grow rooms with CO_2. This presents asphyxiation hazards regulated by operational and system installation permits. Emergency shut off valves, alarms, and warning signs are needed as well as Carbon Monoxide detection systems.
14. **Fumigation:** Fumigation is prevalent in Cannabis growth. In Colorado, this requires a permit with assessment on the impact to neighbouring tenants. This has proven difficult to enforce as growers sometimes fumigate overnight without the appropriate permits. The resulting compounds can burn the respiratory tract.
15. **Butane:** Extraction using butane is the most cost effective yet the most dangerous method of Cannabis processing used. The use of butane creates two hazards. It is dangerous if released openly and it has explosive characteristics if used in closed systems. There have been seven butane explosions in Denver since January 2014.
16. **Hazardous materials and smoke plumes:** Additional training is required since transportation of Cannabis would fall under Hazardous materials as well as training for dealing with smoke plumes.

Education and Inspection Costs:

In Denver, the experience is that the number of inspections and fire code violations has increased significantly and they are more prevalent in marijuana-related occupancies than in any other occupancy type. Violations include overloaded electrical systems, noncompliant construction (e.g., unpermitted construction, noncompliant locks), using unapproved marijuana extraction equipment, unapproved CO_2 enrichment systems, and occupying a space without a certificate of occupancy.

In Colorado, the number of inspections has increased substantially since 2010. Each fire department is likely to require additional staff. Firefighter education also had to be increased to cover the following life-saving information for firefighters:

(1) That the ceilings above them may be laden with suspension lighting systems that could pose a serious entanglement hazard if the ceiling suspension components have fail.
(2) CO_2 enrichment systems have the potential to fail and become asphyxiation hazards, and CO_2 generators can result in high CO levels. This could lead to medical emergencies.
(3) Fumigation activities can be hazardous and may occur when growers are not on site. Sulfur dioxide produced from sulfur burners is hazardous if inhaled. The rotten egg smell of sulfur and burning of the respiratory tract are signs this fumigation can be in operation.
(4) Large converted warehouses can be maze-like with multiple rooms and partitions. A graphic map needs to be provided with the fire safety plan located at enunciator panels.
(5) Modified electrical systems are always a concern in grow operations. Power may be run from unusual sources such as neighbouring buildings.

The importance of the federal government speaking up on the expectations of how fire issues will be addressed is illustrated by the possibility that if no leadership is taken in the education and standard setting for Cannabis related fire issues, we may easily have as many approaches as departments or jurisdictions. In the references, you will find links illustrating examples of four different approaches.

3. Cannabis in residential buildings and the false protection of legalization

While one may think that regulation would help avert the dangers of Cannabis growth from a building and fire code perspective, this is not necessarily the case. Licensed medicinal Cannabis growing has been shown to have as many issues as illicit Cannabis growing. This has been studied in Surrey and the results have been published in peer reviewed journals (Clare et al, 2017). In addition, a literature review has been published showing "five harms" that result when Cannabis is grown in residential buildings (Garis et al, 2016). These formed the basis of CAFC's submission in 2016 by then President Chief Paul Boisonneault and Surrey Fire Chief Len Garis. We continue to stand by this position and see no reason Cannabis should be grown in residential buildings. We are once again asking the federal government to begin with a higher level of safety and begin with prohibiting the growth of Cannabis in residential occupancies. Think of the situation it creates for a firefighter where people choose to exercise a right to grow Cannabis, and end up creating a fire hazard that may a member of a vulnerable population at risk.

Recommendations and Conclusions

From our discussion, our recommendations are as follows:

1. Include fire and building code considerations in the Cannabis regulations and legislation so that it does not become subject to the complex building code process that exists.
2. Assess the costs of education and inspection related to the federal government's decision to legalize Cannabis and provide funding for additional education, fire resources and inspection to municipalities.
3. Include the tracking of fires and building code related adverse events related to Cannabis growth in the Cannabis Tracking system.
4. Expand the definition of physical safety to include fire and building code related considerations.
5. Prohibit the growth of Cannabis in residential occupancies

In conclusion, we appreciate the opportunity to submit our concerns. The CAFC and its members remain available to the Government of Canada and all interested parties, to advance fire safety issues. In this regard, please do not hesitate to contact the CAFC Executive Director whose information is available on the cafc.ca website. Thank you again for considering these perspectives.

References

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