

Mr. Eric Coston, Director General  
Cannabis Legalization and Regulation Branch  
Health Canada

December 5, 2018

Ottawa,  
**VIA EMAIL:**

Dear Eric,

Further to previous correspondence and discussions, I am pleased to present an information package to support the regulation and promotion of safe cannabis and hemp extraction in Canada.

We greatly appreciate your ongoing work and interest in this rapidly evolving element of the cannabis sector. We also appreciate your accessibility, willingness to hear from experienced professionals and build on established best practices. We believe we have a shared goal of establishing Canada as the international leader in the safe processing of cannabis.

Among other things, this information package includes technical and supporting documents from one of the United States' leading cannabis extraction companies, ExtractionTek Solutions (ETS). Based in Colorado and operating since 2010, ETS has safely installed over 600 active extraction systems in licensed U.S. processing facilities. Over the past year, ETS has been working with Underwriters Laboratories (UL) to establish the first 'Listing' for cannabis extraction systems within U.S. licensed processing facilities.

3 Carbon is pleased to partner with ETS in Canada and we have received their permission to share these technical documents with your team:

- Peer Review Engineering Report on ETS Modular Extraction Platform
- White Paper: Facility Guidelines
- Operations Manual
- Example: Certified Operator Training Certificate
- United States Federal Patents

In addition to ETS, 3 Carbon is collaborating with Colorado's HAL Extraction Technology (HAL) and Lab Society. HAL is North America's leading manufacturer of plant oil extraction facilities. With the only Underwriter Laboratories Certified modular extraction room in the cannabis industry, HAL is also an active participant in UL's new Canada Committee.

Lab Society is a laboratory equipment manufacturer located in Boulder, Colorado. Established in 2015, Lab Society provides technical support, sales, administrative, warehousing, development staff and proprietary software that connect their advanced lab devices and allow for unprecedented levels of data logging and automation.

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With ETS, HAL and Lab Society recognized as industry leaders, we believe the details and specifications of their state-of-the-art equipment - and the associated training requirements - provide a baseline for your efforts to establish a regulatory structure for consumers that:

- exceeds quality and safety standards required in the U.S.
- establishes engineering standards and compliance provisions for building and fire codes
- identifies safe methodologies and equipment standards regarding post-processing and distillation of cannabis and hemp
- defines how closed-loop hydro-carbon extraction can function safely and efficiently

In collaboration with ETS, HAL and Lab Society, 3 Carbon has developed a short summary of suggestions to help guide Health Canada's deliberations over the coming months regarding a regulatory approach to the safe and health production of edible products and derivatives. The attached overview reflects feedback received from a diverse group of sector stakeholders over the past three months.

Over the coming weeks, we will be reaching out to these and other sector leaders in Canada to discuss these ideas, strengthen our suggestions and present an updated proposal in association with the introduction of new federal regulations to guide the sale and production of edible cannabis products and derivatives.

As always, we would like to include your feedback in this process. I will be in touch with your team to arrange an opportunity for us to discuss these opportunities.

3 Carbon, our international partners and many others are excited about Canada's leadership and pleased to offer our ongoing expertise to help promote a new global standard of consumer and workplace safety related to cannabis processing and extraction.

Yours truly,

A handwritten signature in black ink, appearing to read 'Phil Kwong', with a large, sweeping flourish above the name.

Phil Kwong,  
CEO

Attachments:

- Company Profiles
- Overview: Health and Safety Guidelines for Cannabis and Hemp Extraction
- Engineering Peer Review – Modular Extraction Platform
- Facility Guidelines White Paper
- Operations Manual
- Example: Certified Operator Training Certificate
- United States Federal Patents



## Overview: Health and Safety Guidelines for Cannabis and Hemp Extraction

As more legal cannabis products become available to Canadians with the regulation of edibles and derivatives in 2019, cannabis extraction will become a more significant element of the manufacturing process and regulatory framework.

Among other things, this will lead to a dramatic increase in demand for processing and extraction facilities. The most common methods of cannabis extraction are:

- **Hydrocarbon:** An approved method under the CFIA and common in many manufacturing processes, including decaffeinating coffee, botanical oil production, perfumery, food preparation and numerous health care products related to dentistry, general medicine, surgery, optometry and pharmacy.
- **Alcohol:** Isopropyl and food grade 200 proof ethanol are commonly used to create oil and concentrates. Ethanol extraction can process large amounts of cannabis in a short period, but results in a more-limited line of end-products and higher solvent loss rates.
- **CO<sub>2</sub>:** Applies super or sub-critical CO<sub>2</sub> as a solvent by controlling the temperature and pressure. While not flammable or explosive, this method operates at high pressures that must be properly ventilated.

While these methods are common throughout the cannabis processing sectors, none are necessarily safer than the others. All are industrial scientific processes that require proper facility guidelines and operator training to create a safe environment and operation.

U.S. States that legalized cannabis years ago has established comprehensive health and safety standards for cannabis extraction in collaboration with the private sector that can inform Canadian regulations. In November 2018, Health Canada published limits of residual solvents for cannabis products and included hydro-carbons, ethanol and CO<sub>2</sub>.

Prepared by Vancouver extraction company 3 Carbon, this overview provides a summary of suggestions Health Canada can consider in association with the introduction of new regulations over the coming year. In addition to building on best U.S. practices, they reflect feedback from experienced cannabis extraction companies and other key Canadian cannabis stakeholders.

3 Carbon is reaching out to other sector leaders in Canada to discuss these ideas, strengthen suggestions and present an update to Health Canada to coincide with the introduction of draft regulations to guide the sale and production of edible cannabis products and derivatives.



## POLICY GOALS

- Foster a culture of health and safety in emerging sector.
- Benefit from a broad range of sector perspectives.
- Educate and engage key community stakeholders.
- Build on established U.S. quality and safety standards.
- Establish engineering standards and compliance provisions for building and fire codes.
- Identify safe methodologies and equipment standards regarding post-processing and distillation of cannabis and hemp.
- Define how closed-loop hydro-carbon extraction can function safely and efficiently.

## POLICY ELEMENTS

Equipment and  
Facility Standards

Training and  
Certification

Post-Processing

Sector Collaboration

### Equipment and Facility Standards

- Regulations should establish minimum standards for equipment used throughout the cannabis extraction process, particularly regarding design, fabrication and maintenance schedules.
- Equipment manufacturers should commission a third-party peer reviewed by a licensed-engineering firm that confirms their extraction system’s design and operational standards meet and/or exceed all related Canadian fire codes.
- The processing facility where cannabis extraction takes place must meet minimum standards related to zoning compliance, storage, security and emissions.

### Training and Certification

- The original manufacturers of cannabis extraction equipment must have an established, comprehensive training program that ensures operators are educated in facility guidelines, safe operation and maintenance of their extraction system.
- Training programs should include a detailed operation manual, dated certificates with a unique serial number and requirements for manufacturers to maintain a registry of issued certificates.
- Safety training standards and education programs must be established on an expedited basis for regulatory officials (fire chiefs, municipal staff, building inspectors). These key

stakeholders must establish communication with industry experts to better understand the extraction process, safety standards and facility requirements.



## KEY ELEMENTS

### Post Processing

- Post-processing occurs after the cannabis extraction process, when concentrate is manufactured into food, vape cartridges, capsules and natural health products. This process utilizes different types of laboratory equipment, from vacuum ovens and rotary evaporators to de-carboxylation ovens and distillation apparatuses.
- All post-processing manufacturers should be required to comply with Nationally Recognized Testing Laboratories standards.
- To ensure consumers access healthy products, cannabis processors must submit final product samples to a third-party analytical lab that tests for residual solvent content, pesticides, microbials and other *Cannabis Act* requirements for licensed producers.
- This product testing process must be integrated into federal/provincial tracking technologies to ensure accurate labelling and product information for consumers.

### Sector Collaboration

- While not a regulatory measure, ongoing consultation with knowledgeable sector leaders in Canada, the United States and around the world will expedite the establishment of relevant regulations and help Canada establish international health and safety standards for cannabis extraction, processing and manufacturing.
- Health Canada should support establishment of a health and safety council for cannabis extraction, processing and manufacturing that can:
  - adopt best practices from other sectors
  - establish a quality control model
  - educate regulators
  - collaborate with other levels of government
  - share public health and safety goals