



Date: July 13, 2017
To: Medical Cannabis Dispensary Applicants
From: Nelson Kerr, Environmental Health Manager
Subject: Laboratory Testing of Medical Cannabis and Medical Cannabis Products

Pursuant to Long Beach Municipal Code (LBMC) Section 5.90.060, all licensed Medical Cannabis Dispensaries (“Dispensaries”) in the City of Long Beach are required to have representative samples of any medical cannabis that will be sold by the business analyzed and tested by an independent laboratory for concentration, pesticides, mold and other contaminants regulated under local, state, or federal law. Sale of untested medical cannabis products is a violation of LBMC Chapter 5.90, subject to penalties and/or revocation of the Dispensary business license.

The independent laboratories that will be performing such testing will be licensed as a Type 8 Testing Laboratories under the Medical and Adult-Use Cannabis Regulation and Safety Act (MAUCRSA) upon implementation in approximately January 2018. Until such time as the State is issuing MAUCRSA Type 8 Testing Laboratory licenses, the City will permit Dispensaries to utilize the existing network of ISO 17025 accredited cannabis testing labs located throughout the state. Cannabis Testing Laboratories that have obtained ISO 17025 accreditation will be deemed to have met the operating conditions set forth in LBMC Section 5.90.0120.

The City will also be opening up the application process for testing laboratories to obtain a local Medical Cannabis Testing Laboratory business license. Due to the requirements for testing laboratories, licenses most likely won’t be issued until the end of 2017. This delay is necessary to allow Testing Laboratories an opportunity to obtain ISO accreditation from a third party accrediting agency pursuant to LBMC Section 5.90.0120.

City staff has prepared a “List of ISO Accredited Labs” (Attachment A) identifying all of the Cannabis Testing Laboratories in California that are ISO 17025 accredited. Dispensaries are required to ensure that representative samples of cannabis and cannabis products are tested at one of the facilities included in the List of ISO Accredited Labs until labs are issued a MAUCRSA Type 8 license and/or a local license. The City of Long Beach Health Department will confirm, through inspection, that all cannabis and cannabis products are tested at one of the approved labs. If City staff is made aware of other ISO accredited labs that exist in California, or if other labs obtain ISO accreditation after this list was prepared, staff will update the list to include these additional labs.

Laboratory Testing Results

Pursuant to LBMC Section 5.90.0120, all testing shall be compliant with the MAUCRSA standards. MAUCRSA establishes minimum requirements for what types of analytes (chemicals, compounds, microorganisms, etc.) must be tested for by a Medical Cannabis Laboratory (Attachment B). These analytes must be included in the Certificate of Analysis provided by the Testing Laboratory, and maintained on record by the licensed Dispensary. During Health Department inspections, City staff will check to confirm that Certificates of Analysis for cannabis products sold at the Dispensary contain minimum information on tested analytes required under MAUCRSA, from an ISO accredited lab.

MAUCRSA also sets limits for levels of contaminants that tested cannabis and cannabis products may not exceed (Attachment C). MAUCRSA requires that:

[T]he presence of contaminants does not exceed the levels set by the Bureau of Cannabis Control. In setting the levels, the bureau shall consider the American Herbal Pharmacopoeia monograph, guidelines set by the Department of Pesticide Regulation... and any other sources.¹

Given that the Bureau of Cannabis Control has not set maximum levels for contaminants or volatile organic compounds, cannabis test results shall be held to the maximum levels established by the American Herbal Pharmacopoeia. Should any cannabis products be found to exceed these limits, the Dispensary will be responsible for ensuring that none of that product is sold to patients. Sale of medical cannabis product that exceeds maximum levels for contaminants will be deemed a violation of LBMC Chapter 5.90.

Product Packaging

Pursuant to Section 26120 of the California Business and Professions Code, packages of medical cannabis and medical cannabis products sold at a dispensary shall meet the following requirements:

- 1) *Prior to delivery or sale at a retailer, cannabis and cannabis products shall be labeled and placed in a resalable, tamper evident, child resistant package.*
- 2) *Packages and labels shall not be made attractive to children.*
- 3) *Only generic food names may be used to describe the ingredients in edible cannabis products.*

In addition, all cannabis and cannabis product labels and inserts shall include the following information, prominently displayed and in a clear and legible fashion:

- 1) *The following statements, in bold print:*
 - a. **For cannabis: "GOVERNMENT WARNING: THIS PACKAGE CONTAINS CANNABIS, A SCHEDULE I CONTROLLED SUBSTANCE. KEEP OUT OF REACH OF CHILDREN AND ANIMALS. CANNABIS MAY ONLY BE POSSESSED OR CONSUMED BY PERSONS 21 YEARS OF AGE OR OLDER UNLESS THE PERSON IS A QUALIFIED PATIENT. CANNABIS USE WHILE PREGNANT OR BREASTFEEDING MAY BE**

¹ California Business and Professions Code § 26101(d)(2).

HARMFUL. CONSUMPTION OF CANNABIS IMPAIRS YOUR ABILITY TO DRIVE AND OPERATE MACHINERY. PLEASE USE EXTREME CAUTION."

- b. For cannabis products: "GOVERNMENT WARNING: THIS PRODUCT CONTAINS CANNABIS, A SCHEDULE I CONTROLLED SUBSTANCE. KEEP OUT OF REACH OF CHILDREN AND ANIMALS. CANNABIS PRODUCTS MAY ONLY BE POSSESSED OR CONSUMED BY PERSONS 21 YEARS OF AGE OR OLDER UNLESS THE PERSON IS A QUALIFIED PATIENT. THE INTOXICATING EFFECTS OF CANNABIS PRODUCTS MAY BE DELAYED UP TO TWO HOURS. CANNABIS USE WHILE PREGNANT OR BREASTFEEDING MAY BE HARMFUL. CONSUMPTION OF CANNABIS PRODUCTS IMPAIRS YOUR ABILITY TO DRIVE AND OPERATE MACHINERY. PLEASE USE EXTREME CAUTION."*
- 2) For packages containing only dried flower, the net weight of cannabis in the package.*
 - 3) Identification of the source and date of cultivation, the type of cannabis or cannabis product and the date of manufacturing and packaging.*
 - 4) The appellation of origin, if any.*
 - 5) List of pharmacologically active ingredients, including, but not limited to, tetrahydrocannabinol (THC), cannabidiol (CBD), and other cannabinoid content, the THC and other cannabinoid amount in milligrams per serving, servings per package, and the THC and other cannabinoid amount in milligrams for the package total.*
 - 6) A warning if nuts or other known allergens are used.*
 - 7) For a medical cannabis product sold at a retailer, the statement "FOR MEDICAL USE ONLY."*

Sale of medical cannabis product that does not meet minimum requirements for packaging and labeling will be deemed a violation of LBMC Chapter 5.90.

For more information, please contact the medical cannabis hotline at (562) 570-5150.

Attachment A

List of ISO Accredited Medical Marijuana Testing Laboratories

1. PharmLabs
1859 Cable Street
San Diego, CA 92107
(619) 356-0898
info@sdpharmlabs.com
sdpharmlabs.com

2. Konocti Analytics
408 Sunrise Avenue
Roseville, CA 95661
(916)771-3114
info@konocitlabs.com
konocitlabs.com

3. CW Analytical
Oakland, CA 94621
(510) 545-6984
lab@cwanalytical.com
cwanalytical.com

4. Canna Safe Analytics
26359 Jefferson Ave, Suite G
Murrieta CA, 92562
(951)239-3239
info@csalabs.com
csalabs.com

5. SC Labs*
100 Pioneer Street, Suite E
Santa Cruz, CA 95060
(866) 435-0709
info@sclabs.com
sclabs.com

**Note: SC Labs has multiple testing labs operating throughout California. However, only the Santa Cruz lab is ISO 17025 certified. Therefore, only samples tested at the Santa Cruz location will be considered to have satisfied the Long Beach Medical Marijuana testing requirements.*

Attachment B

Minimum Medical Marijuana Testing Requirements

1. A licensed testing laboratory shall issue a certificate of analysis for selected lots to report the following:
 - a. Whether the chemical profile of the lot conforms to the specifications of the lot for compounds, including, but not limited to, all of the following:
 - i. Tetrahydrocannabinol (THC).
 - ii. Tetrahydrocannabinolic Acid (THCA).
 - iii. Cannabidiol (CBD).
 - iv. Cannabidiolic Acid (CBDA).
 - v. Terpenes.
 - vi. Cannabigerol (CBG).
 - vii. Cannabinol (CBN).
2. That the presence of contaminants does not exceed the levels set by the American Herbal Pharmacopoeia monograph. For purposes of this paragraph, contaminants includes, but is not limited to, all of the following:
 - a. Residual solvent or processing chemicals
 - i. **(see Attachment C, Tables 1 & 2)**
 - b. Foreign material, including, but not limited to, hair, insects, or similar or related adulterant
 - i. **(see Attachment C, Table 3)**
 - c. Microbiological impurities
 - i. **(see Attachment C, Table 4)**
 - d. *Residual levels of volatile organic compounds.*
3. That the medical marijuana product is free of harmful pesticides and other contaminants regulated under local, state or federal law. At this time, neither the United States Environmental Protection Agency, nor the State of California Department of Pesticide Regulation, have established appropriate pesticide tolerances for, or permitted the registration and lawful use of, pesticides on cannabis crops intended for human consumption. Until the State Department of Pesticide Regulation releases limits on pesticide levels in medical marijuana products, the City of Long Beach has recommended local pesticide limits, using standards developed by the State of Oregon that regulate pesticide levels for medical marijuana. These limits are available as reference to help businesses and patients determine acceptable levels of pesticides in marijuana products. This list shall be made available to patients upon request.
 - i. **(See Attachment C, Table 5)**

Attachment C

American Herbal Pharmacopoeia

Tables 1 & 2 – Residual Solvent Limits

Solvents are categorized in 3 classes. Class 1 includes known carcinogens, toxic substances, and environmental hazards such as benzene, carbon tetrachloride, 1,2-dichloroethane, 1,1-dichloroethene, and 1,1,1-trichloroethane. These are to be avoided in the manufacture of herbal and/or pharmaceutical products. Class 2 and 3 (**Table 1**) solvents are distinguished based on their relative toxicity level. Limits established for permissible daily exposures are determined individually for Class 2 solvents. Limits for Class 3 solvents are set at a general limit of 50 mg/day. In addition, there are solvents for which no adequate toxicological data was found (**Table 2**) and requires manufacturers of pharmaceutical products that choose to use these solvents to supply justification for residual levels of these solvents in their final products. Petroleum ether, found in this group, is reportedly used in the production of hash oil.

Solvent extracted products made with Class 3 or other solvents, are not to exceed 0.5% residual solvent by weight or 5000 parts per million (PPM) per 10 gram of solvent-based product and are to be quantified according to the United States Pharmacopeia, Chapter 467, Residual Solvents, Option 1. Higher concentrations may also be acceptable provided they are realistic in relation to safety, manufacturing, and good manufacturing practices.

(See next page)

Table 1 - Permissible and restricted solvents in the manufacture of cannabis preparations

Class 2 solvents		Class 3 solvents Permissible daily exposure: 50 mg/day
Solvent	Permissible daily exposure, mg/day	
Acetonitrile	4.1	Acetic acid
Chlorobenzene	3.6	Acetone
Chloroform*	0.6	Anisole
Cyclohexane	38.8	1-Butanol
1,2-Dichloroethene	18.7	2-Butanol
Dichloromethane*	6.0	Butyl acetate
1,2-Dimethoxyethane	1.0	tert-Butylmethylether
N,N-Dimethylacetamide*	10.9	Cumens*
N,N-Dimethylformamide	8.8	Dimethyl sulfoxide
1,4-Dioxane*	3.8	Ethanol*
2-Ethoxyethanol	1.6	Ethyl acetate
Ethyleneglycol	6.2	Ethyl ether
Formamide	2.2	Ethyl formate
Hexane	2.9	Formic acid
Methanol*	30.0	Heptane
2-Methoxyethanol	0.5	Isobutyl acetate
Methylcyclohexane	11.8	Methyl acetate
N-Methylpyrrolidone*	5.3	3-Methyl-1-butanol
Nitromethane*	0.5	Methylethyl ketone
Pyridine*	2.0	Methylisobutyl ketone
Sulfolane	1.6	2-Methyl-1-propanol
Tetrahydrofuran	7.2	Pentane
Tetralin	1.0	1-Pentanol
Toluene*	8.9	1-Propanol
1, 1,2-Trichloroethene	0.8	2-Propanol
Xylene	21.7	Propyl acetate

Table 2 - Solvents for which no adequate toxicological data was found

1, 1-Diethoxypropane	Methylisopropyl ketone
1, 1-Dimethoxymethane	Methyltetrahydrofuran
2,2-Dimethoxypropane	Petroleum ether
Isooctane	Trichloroacetic acid
Isopropyl ether	Trifluoroacetic acid

Table 3 – Heavy metal limits

The American Herbal Products Association (AHPA) provides manufacturers of herbal products with general recommendations for maximum heavy metals levels in herbal products, based on the daily product intake amount (**Table 3**).

Table 3 - Metal limits recommended for herbal products in the US	
Contaminating metal	Limit, pg/daily dose
Inorganic arsenic	10.0
Cadmium	4.1
Lead	6.0
Methyl mercury	2.0

Table 4 – Microbiological impurity limits

Recommended tolerance limits for cannabis products are provided in **Table 4** and were based on a review of national and international recommendations for botanical products as well as discussion with a variety of stakeholders (e.g., Washington State). Additional guidance for botanical products is provided in national and international compendia based on oral consumption of finished botanical products. Additionally, more restrictive limits may be adopted for medical use of cannabis, most notably when used by immune compromised individuals. Microbes such as *Aspergillus* spp., for example, can be transmitted through inhalation and are of specific concern in those with specific medical conditions (e.g. chronic granulomatous disease and cystic fibrosis) and when employing specific medical treatments (e.g., immunosuppressive therapies).

Table 4 - Microbial and fungal limits recommended for orally consumed botanical products in the US (CFU/g)					
Material Type	Total viable aerobic bacteria	Total yeast and mold	Total coliforms	Bile-tolerant gram-negative bacteria	<i>E. coli</i> (pathogenic strains) and <i>Salmonella</i> spp.
Unprocessed materials*	10 ⁵	10 ⁴	10 ³	10 ³	Not detected in 1 g
Processed materials*	10 ⁵	10 ⁴	10 ³	10 ³	Not detected in 1 g
CO2 and solvent-based extracts	10 ⁴	10 ³	10 ²	10 ²	Not detected in 1 g

Table 5 – Pesticide Limits

Table 5 - Pesticide analytes and their action levels			Analyte	Chemical Abstract Services (CAS) Registry Number	Action level ppm
Abamectin	71751-41-2	0.5	Hexythiazox	78587-05-0	1.0
Acephate	30560-19-1	0.4	Imazalil	35554-44-0	0.2
Acequinocyl	57960-19-7	2.0	Imidacloprid	138261-41-3	0.4
Acetamiprid	135410-20-7	0.2	Kresoxim-methyl	143390-89-0	0.4
Aldicarb	116-06-3	0.4	Malathion	121-75-5	0.2
Azoxystrobin	131860-33-8	0.2	Metalaxyl	57837-19-1	0.2
Bifenazate	149877-41-8	0.2	Methiocarb	2032-65-7	0.2
Bifenthrin	82657-04-3	0.2	Methomyl	16752-77-5	0.4
Boscalid	188425-85-6	0.4	Methyl parathion	298-00-0	0.2
Carbaryl	63-25-2	0.2	MGK-264	113-48-4	0.2
Carbofuran	1563-66-2	0.2	Myclobutanil	88671-89-0	0.2
Chlorantraniliprole	500008-45-7	0.2	Naled	300-76-5	0.5
Chlorfenapyr	122453-73-0	1.0	Oxamyl	23135-22-0	1.0
Chlorpyrifos	2921-88-2	0.2	Pacllobutrazol	76738-62-0	0.4
Clofentezine	74115-24-5	0.2	Permethrins*	52645-53-1	0.2
Cyfluthrin	68359-37-5	1.0	Phosmet	732-11-6	0.2
Cypermethrin	52315-07-8	1.0	Piperonyl_butoxide	51-03-6	2.0
Daminozide	1596-84-5	1.0	Prallethrin	23031-36-9	0.2
DDVP (Dichlorvos)	62-73-7	0.1	Propiconazole	60207-90-1	0.4
Diazinon	333-41-5	0.2	Propoxur	114-26-1	0.2
Dimethoate	60-51-5	0.2	Pyrethrins†	8003-34-7	1.0
Ethoprophos	13194-48-4	0.2	Pyridaben	96489-71-3	0.2
Etofenprox	80844-07-1	0.4	Spinosad	168316-95-8	0.2
Etoxazole	153233-91-1	0.2	Spiromesifen	283594-90-1	0.2
Fenoxycarb	72490-01-8	0.2	Spirotetramat	203313-25-1	0.2
Fenpyroximate	134098-61-6	0.4	Spiroxamine	118134-30-8	0.4
Fipronil	120068-37-3	0.4	Tebuconazole	80443-41-0	0.4
Flonicamid	158062-67-0	1.0	Thiacloprid	111988-49-9	0.2
Fludioxonil	131341-86-1	0.4	Thiamethoxam	153719-23-4	0.2
			Trifloxystrobin	141517-21-7	0.2

* Permethrins should be measured as cumulative residue of cis- and trans-permethrin isomers (CAS numbers 54774-45-7 and 51877-74-8).

† Pyrethrins should be measured as the cumulative residues of pyrethrin 1, cinerin 1 and jasmolin 1 (CAS numbers 121-21-1, 25402-06-6, and 4466-14-2).