

Charles L. Sihler,
200 Orange Ave – Unit # 104,
Coronado, CA 92118-1441

13 December, 2019

Mendocino County Planning Commission

Attn: Sam "Vandy" Vanderwater, PlannerII

Re: GP -2019-0005/ RR-2019-0006/

Mendocino County
DEC 16 2019
Planning & Building Services

We [my wife & I] own the property and home directly across Highway 101, [43250] which we are renting to our daughter, son-in-law and their family, and as such, concerned about the subject property. For this reason, I drove the 700+ miles up here to look into these issues. We are not opposed to this project, however it is our desire that it be done safely, not only for us but the community in general.

In reviewing the documentation provided, I was surprised to find very little on the proposed use of the new building; scant on the details of the processing operation. The documentation provides a great deal of "Known" information about the site, however, very little detail on the critical factors, that could effect the processing operations on the site.

I have spent a significant amount of time, working on fire prevention & fire suppression over the past 40+ years, most recently as a contract resident engineer/ project manager, in Southern California.

In my research on this project, I have found a wide diversity of issues in processing of cannabis – from very safe to highly hazardous protocols, that require a significant amount of fire protection. Utilizing some of the human assets that I have met, I was able to find a great deal of information, on the hazards of the various methods of processing cannabis and the possible alternatives.

Colorado Springs, CO, has been dealing with these problems for several years, and have developed and adopted safety/fire regulations, that are becoming the "Standard" for the industry – To the point that the new NFPA Chapter 38, on the subject, is basically, based upon their work. Los Angeles County Fire Marshall, Special occupancy Inspection Unit, has developed their own Regulation 30, based upon this document, as an appendix to the Los Angeles County Fire code. A copy of their Reg 30 is attached to this letter, for your use, by permission.

Typically, in metropolitan areas, fire sprinklering the building, from the public water system would be absolutely mandatory, however there is no public water main within a half mile of the building. While the installation of such a main would be highly desirable, to us, we realize that the costs would be prohibitive. In areas where I have had this issue on previous projects, the alternate is to construct adequate on-site water storage, with fire pumps to pressurize the fire sprinkler system. Some processes may require a dry chemical system as well. Type of system(s), amount of water storage & pump capacity, to be determined by the responsible Fire Prevention Bureau.

I am requesting that you require the applicant, prior to final approval of the Negative Declaration, to provide sufficient detail to Cal-Fire, Fire Prevention Bureau, or State Fire Marshall for them to develop appropriate requirements for the proposed uses, and restrict the uses to only CalFire approved uses. This will result in a Mitigated Negative Declaration.

Additionally, since they commenced their grow operations, there have been several occasions that, the pumping water from their well, has resulted in the interruption of the ability for our well to provide adequate water to our house, and landscaping. Therefore, I am requesting that the applicant be required to conduct a study to determine a fair amount of extraction for each property, considering that we, most probably, have prior rights.

Respectfully submitted,

Charles L. Sihler, Principal
Sihler & Associates, Construction Management

Attachment - L.A. Co, Fire Dept – Regulation 30

Cc: [e-mail] w/attachment

A. Massucco, CalFire Fire Prevention Bureau,
S. Carberry, Chief, Laytonville Fire Dept
J. Shields, Manager, Laytonville County Water District

I. INTRODUCTION

- A. Purpose: To establish consistent requirements for businesses that engage in cannabis cultivation and/or production. Any commercial buildings or tenant space that handles cannabis products will need to submit detailed plans to the Los Angeles County Fire Department (Department) Special Occupancy Inspection Unit for review.
- B. Scope: This regulation shall apply to all individuals, companies, and organizations which propose to engage in cannabis cultivation and/or production.
- C. Author: The Deputy Fire Chief of the Prevention Services Bureau, through the Assistant Fire Chief (Fire Marshal) of the Fire Prevention Division is responsible for the content, revision, and periodic review of this regulation.
- D. Authority: Los Angeles County Fire Code, Title 32, Appendix Chapter 1, Sections 102.8, 102.9, 104.1.
- E. Definitions:

AUTHORITY HAVING JURISDICTION (AHJ): Department Fire Marshal or designee

CARBON DIOXIDE ENRICHMENT SYSTEM: A system where carbon dioxide (CO₂) gas is intentionally introduced into an indoor environment, typically for the purpose of stimulating plant growth.

CBC: California Building Code

CCR: California Code of Regulations

CFC: California Fire Code

CUPA: Certified Unified Program Agency

DESOLVENTIZING: The act of removing a solvent from a material.

DISTILLATION: The act of separating and collecting specific distillates.

GAS DETECTION SYSTEM: A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this regulation, such as notifying a responsible person, activating an alarm signal, or activating or deactivating equipment. A self-contained gas detection and alarm device is not classified as a gas detection system.

LPG: Liquefied Petroleum Gas

LFL: Lower Flammable Limit

MAQs: Maximum Allowable Quantities

MISCELLA: A mixture, in any proportion, of the extracted oil or fat and the extracting solvent.

NFPA: National Fire Protection Association, Incorporated

NTP: Normal Temperature and Pressure

PPM: Parts per million

REGISTERED DESIGN PROFESSIONAL: A California State Certified and Licensed Engineer or a California State Certified and Licensed Industrial Hygienist

II. RESPONSIBILITY

- A. All individuals, companies and organizations that propose to engage in cannabis cultivation and/or production are subject to the requirements of this regulation.
- B. All Department personnel with enforcement responsibilities shall be guided by the regulation to ensure consistent application and equitable enforcement codes.

III. POLICY

- A. This regulation outlines the Department's requirements related to businesses that engage in cannabis cultivation and/or production.
 - 1. General Requirements:
 - a. All buildings shall comply with the current California Building Standards Commission Codes. Occupancy classification is established by the building official. Facilities shall meet all current codes. Cannabis cultivation and/or production operations are prohibited in the following Occupancies: Group A, E, I, or R. This regulation provides requirements for plant processing and extraction facilities and CO₂ enrichment.

The requirements of this regulation shall not be construed to alter any existing code, law, or regulation which may require fire protection features not covered or alluded to in these requirements, nor shall they waive any requirements of any code, law, or regulation.

IV. PROCEDURES

A. Application:

All businesses that engage in cannabis cultivation and/or production activities must complete a Department Statement of Intended Use (Form 30c) and obtain all required permits and approvals before engaging in any operations.

B. Operational Permits:

Permits required by the fire code shall be obtained from the fire code official prior to operations beginning. An operational permit is required to use a Plant Extraction System and/or a CO₂ Enrichment System. Additional permits required by other sections of the fire code include, but are not limited to, LPG, Compressed Gases, Flammable and Combustible Liquids, and Hazardous Materials Handler, and any required CUPA permits (i.e., Hazardous Waste Generator, Underground Storage Tanks, Above Ground Petroleum Storage Tank, and California Accidental Release Prevention Permit, etc.).

C. Operational Permits may be revoked if:

1. Any of the conditions or limitations set forth in the permit have been violated.
2. Compliance with written orders have not been achieved.
3. False statements or misrepresentations of information are provided in the permit application or inventory statement.
4. The permit was issued in error or in violation of the California Building Standards Commission, the California Health and Safety Code and/or relevant laws, ordinances, rules, and regulations of the County of Los Angeles.

D. Plan Check Requirements:

1. Number of Copies: Minimum of three copies of construction documents shall be submitted.

2. Official Signoff: Attach a copy of the receipt or other documentation as proof that the city building official or the Los Angeles County Department of Public Works has collected the appropriate fees, classified the building occupancy, and has completed the appropriate plan check process. Approval documentation shall clearly show any areas that are intended for extraction or enrichment.
3. "Wet Stamp": Shall be required on appropriate plan sheets indicating the plans have been approved by an appropriate design professional.

Approval and stamping of the plans shall constitute a construction permit.

Operational Permits may not be issued until after final inspection of the project and all requirements have been met.

4. Liquefied Petroleum Gas (LPG)
 - a. Discharge: Shall not be released to the atmosphere except in accordance with NFPA 58 (CFC 3803.7).
 - b. General Location of Cylinders:
 - 1) Empty cylinders stored in buildings shall be considered full for determining MAQs (NFPA 58 - 8.2.1.4).
 - 2) Cylinders stored outside shall be stored (in accordance with NFPA 58 – 8.4.1.) as follows:
 - a) 5 feet from doorway with 2 means of egress.
 - b) 10 feet from doorway with 1 means of egress.
 - c) 5 feet from buildings, property lines, sidewalks with tank capacity of less than 720 pounds (2 hour fire wall reduces to 0 feet).
 - 3) Shall not be used in basement or pit with gases that are heavier than air (CFC 6103.2.1.1).
 - 4) Location of LPG containers shall be in accordance with CFC Chapter 61 (CFC 6104.3).
 - 5) Pressure Relief Devices shall be in accordance with CFC 5303.3.
 - 6) Overfill Prevention Devices (NFPA 58 – 5.9.3).

- a) Cylinders 4 to 40 pounds propane capacity, shall be fitted with overfill prevention device.
 - 7) Container Markings where LPG gas is stored (NFPA 58 – 5.2.8.1);
 - a) Cylinders shall be marked, “FLAMMABLE GAS,” “PROPANE,” and/or “BUTANE.”
 - 8) LPG MAQs (CBC table 307.1 1)
 - a) Used in closed systems – 1,000 cubic feet/150 pounds.
 - b) Storage – 1,000 cubic feet/150 pounds.
 - c) Shall be increased 100 percent in buildings with auto sprinkler systems.
 - d) Shall be increased an additional 100 percent with proper storage or ventilation.
 - 9) Number of Control Areas shall be in accordance with CBC table 414.2.2.
5. Flammable and Combustible Liquids:
- Use of flammable/combustible liquids for the extraction process where liquid is boiled, distilled, or evaporated shall have (CFC 3803.6):
- a. Hazardous exhaust fume hood in accordance with CFC Chapter 7 and NFPA 45 and 30.
 - b. Hood and exhaust fans shall be rated for use with flammable vapors.
 - c. Electrical rated for use in flammable atmosphere in accordance with NFPA 36.
 - d. Heating of flammable/combustible liquids over an open flame is prohibited.
6. Fire Sprinklers:
- a. Shall be in accordance with the occupancy classification.
7. Site Specific Process and Hazard Analysis:
- a. This site specific process and hazard analysis shall be

prepared by a registered design professional and is required with plan submissions in conjunction with a Department Statement of Intended Use (Form 30c) on any construction permit, change of use, or change of occupancy request.

- b. A detailed hazard and process analysis shall identify all components of the manufacturing process to be conducted within the proposed site and shall reference all applicable provisions of the most recent Building, Electrical, Fire, and Mechanical Codes.

8. Hazardous Materials Handler (CFC and CUPA Requirements):

- a. A Hazardous Materials Handler Permit is required for all businesses that exceed the reportable threshold limits, including but not limited to the following:
 - 1) 55 gallons for liquids (ex: flammable/combustible liquids, alcohols, solvents).
 - 2) 200 cubic feet for compressed gas (i.e., propane and butane)
 - a) The following cryogenic, refrigerated, or compressed gases are reportable in quantities of 1,000 cubic feet.
 - b) Simple Asphyxiates - per Title 8 of the CCR section 5194.
 - c) CO₂ non-flammable refrigerant gases, as defined in the CFC, which are used in refrigeration systems.
 - d) Gases used in closed fire suppression systems.
 - 3) 500-pounds for solids (ex. sodium hydroxide, boric acid, sodium cyanide).
- b. Key Box: An approved and listed key box, as required in CFC 506, shall be installed on all buildings having an extraction or enrichment process and access to said buildings as necessary.

9. CO₂ Enrichment Systems:

- a. Compressed Gases: Compressed gases in storage or use not regulated by the material-specific provisions of Chapters 6, 54, 55 and 60 through 67, including asphyxiate, irritant and

radioactive gases, shall comply with this section in addition to other requirements of the CFC.

- b. Protection from Damage: CO₂ systems shall be installed so the storage tanks, cylinders, piping, and fittings are protected from damage by occupants or equipment during normal facility operations.
- c. Operational Permits: Operational permits shall be obtained for any CO₂ enrichment systems utilizing more than 100 pounds (874 cubic feet at NTP) of CO₂ and CO₂ enrichment systems with any quantity of CO₂ having a remote fill connection.
- d. Documentation: The following information shall be provided with the application for permit:
 - 1) Total aggregate quantity of liquid CO₂ in pounds or cubic feet at normal temperature and pressure.
 - 2) Location and total volume of the room where the CO₂ enrichment operation will be conducted. Identify whether the room is at grade or below grade.
 - 3) Location of containers relative to equipment, building openings and means of egress.
 - 4) Manufacturer's specifications and pressure rating, including cut sheets, of all piping and tubing to be used.
 - 5) A piping and instrumentation diagram that shows piping support and remote fill connections.
 - 6) Details of container venting, including but not limited to vent line size, material, and termination location.
 - 7) Alarm, detection system and equipment, if applicable.
 - 8) Seismic support for containers.
- e. Equipment: Pressure relief, vent piping, fill indicators, fill connections, vent terminations, piping system, as well as the storage, use, and handling of the CO₂ shall be in accordance with Chapter 53 of the California Fire Code and NFPA 55.
- f. Gas Detection System: A continuous gas detection system shall be provided in the room or indoor area in which the CO₂ enrichment process is located, in the room or indoor area in which the container systems are located and in other areas

where CO₂ is expected to accumulate, including rooms or areas directly adjacent to the enrichment area connected by doors or other means of travel. CO₂ sensors shall be provided within 12 inches of the floor in the area where the gas is expected to accumulate or where leaks are most likely to occur. The system shall be designed as follows:

- 1) Activate a low-level alarm upon detection of a CO₂ concentration not to exceed 5,000 ppm per CFC.
- 2) Activate a high-level alarm upon detection of a CO₂ concentration not to exceed 30,000 ppm per CFC.

g. System Activation:

- 1) Activation of the low-level gas detection system alarm shall automatically:
 - a) Stop the flow of CO₂ to the piping system.
 - b) Activate the mechanical exhaust ventilation system.
 - c) Activate an audible and visible supervisory alarm signal at an approved location within the building.
- 2) Activation of the high-level gas detection system alarm shall automatically:
 - a) Stop the flow of CO₂ to the piping system.
 - b) Activate the mechanical exhaust ventilation system.
 - c) Activate an audible and visible evacuation alarm, both inside and outside of the CO₂ enrichment area, and the area in which the CO₂ containers are located.

h. Gas Detection System Failure: Failure of the CO₂ gas detection system shall result in immediate activation of the ventilation system and the shutdown of the CO₂ enrichment system.

i. Pressurization and Ventilation: Rooms or indoor areas, in which CO₂ enrichment is provided, shall maintain at a negative pressure in relation to the surrounding areas in the building. A mechanical ventilation system shall be provided in accordance

with the California Mechanical Code that complies with all of the following:

- 1) Mechanical ventilation in the room or area shall be at a rate of not less than 1 cubic foot per minute per square foot.
 - 2) When activated by the gas detection system the mechanical ventilation system shall remain on until manually reset.
 - 3) The exhaust system intakes shall be taken from points within 12 inches of the floor.
 - 4) The ventilation systems piping shall terminate outdoors in an approved location.
 - 5) The pressure differential system and the ventilation system shall be interlocked to the CO₂ enrichment system. Failure of either the pressure differential system or the ventilation system shall immediately result in the shutdown of the CO₂ enrichment system.
- j. Signage: Hazard identification signs shall be posted at all entrances to the room and indoor areas where the CO₂ enrichment process is located, and at all entrances to the rooms or indoor areas where the CO₂ containers are located. The sign shall be a minimum of 8 inches wide and 6 inches high and indicate the following:

CAUTION – CARBON DIOXIDE GAS
Ventilate the area before entering.
A high Carbon Dioxide (CO₂) gas concentration in this area can cause asphyxiation.

- k. Seismic and Structural Design: CO₂ system containers and piping shall comply with the seismic design requirements in Chapter 16 of the CBC and shall not exceed the floor loading limitation of the building.
- l. Emergency Shutoff: All CO₂ enrichment systems shall be equipped with an emergency shut off switch that shall stop the enrichment process and activate the area's ventilation system.
- m. Container Refilling: CO₂ containers located indoors shall not be refilled unless filled from a remote connection located outdoors.

- n. Ventilation: Indoor storage and use areas and storage buildings shall be provided with ventilation in accordance with the requirements of Section 5004.3. Where mechanical ventilation is provided, the systems shall be operational during such time as the building or space is occupied.
- o. Exception: A gas detection system complying with “sub-section” (i.5) shall be permitted in lieu of mechanical ventilation.
- p. All exit doors leading from processing and extraction areas shall conform with the following:
 - 1) Shall be installed with listed and approved panic hardware.
 - 2) Shall open out, towards the direction of egress.
 - 3) Shall be equipped with a listed and approved self-closing mechanism.
 - 4) Shall be equipped with a sealing gasket around the door threshold.

10. Processing and Extraction:

- a. Building Construction: Processing activities shall only take place in a building or room constructed in compliance with the CBC.
- b. Prohibited Occupancies: Extraction processes utilizing flammable gases and/or flammable cryogenic fluids shall not be located in any building containing a Group A, E, I, or R occupancy.
- c. Location: The extraction equipment and extraction process utilizing hydrocarbon solvents shall be located in a room or area dedicated to extraction.
- d. Post-Process Purification and Winterization: Post-processing and winterization involving the heating or pressurizing of the miscella to other than normal pressure or temperature shall only be performed in an appliance listed for such use. Domestic or commercial cooking appliances shall not be used.
- e. Industrial Ovens: The use of industrial ovens shall comply with Chapter 30 of the CFC.
- f. Use of Flammable and Combustible Liquids: The use of

flammable and combustible liquids for liquid extraction processes where the liquid is boiled, distilled, or evaporated shall occur under a hazardous exhaust fume hood, rated for exhausting flammable vapors, and comply with Chapter 57 of the CFC. Electrical equipment used within the hazardous exhaust fume hood shall be rated for use in flammable atmospheres. Heating of flammable or combustible liquids over an open flame is prohibited.

- g. NFPA 704 Building Placards: Any building that has flammable or combustible gas for extraction process shall have an appropriate placard externally placed on the building, on the address side, and at any access point within the building where the extraction process occurs.

Exception: The use of a heating element not rated for flammable atmospheres is approved where documentation from the manufacture or approved testing laboratory indicates it is rated for heating of flammable liquids.

- h. LPG shall not be released to the atmosphere.

Exception: LPG may be released to the atmosphere only in accordance with NFPA 58 Section 7.3.

- i. All exit doors leading from processing and extraction areas shall conform with the following:
 - 1) Shall be installed with listed and approved panic hardware.
 - 2) Shall open out towards the direction of egress.
 - 3) Shall be equipped with a listed and approved self-closing mechanism.
 - 4) Shall be equipped with a sealing gasket around the door threshold.
- j. "No Smoking" signs shall be posted at entrances to rooms and in areas containing flammable gases in accordance with Section 5003.7.1 per CFC 5803.1.4.2 Signs.

11. Systems and Equipment:

- a. General Requirements: Systems and equipment used for the processing and extraction of oils and products from plants shall comply with Sections 3804.2 through 3804.4, 5003.2 and other

applicable provisions of the State Fire Code, the CBC, and the California Mechanical Code.

- b. **Systems and Equipment:** Systems or equipment used for the extraction of oils from plant material shall be listed or approved for the specific use. If the system used for extraction of oils and products from plant material is not listed, then the system shall be reviewed by a Registered Design Professional.

The registered design professional shall review and consider any information provided by the system's designer or manufacturer. For systems and equipment not listed for the specific use, a technical report shall be prepared and submitted to the fire code official for review and approval. The firm or individual preparing the technical report shall be approved by the fire code official prior to performing the analysis.

- c. **Technical Report:** The technical report which has been reviewed and approved by the fire code official is required prior to the equipment being located or installed at the facility. The report shall be prepared by a registered design professional or other professional approved by the fire code official.
- d. **Report Content:** The technical report shall contain all of the following:
 - 1) Manufacturer information.
 - 2) Preparer of record on technical report.
 - 3) Date of review and report revision history.
 - 4) Signature page shall include all of the following:
 - a) Author of the report.
 - b) Date of report.
 - c) Date and signature of the Registered Design Professional of record performing the design or peer review.
 - 5) Model number of the item evaluated. If the equipment is provided with a serial number, the serial number shall be included for verification at the time of site inspection.
 - 6) Methodology of the design or peer review process used to determine minimum safety requirements. Methodology

shall consider the basis of design and shall include a code analysis and code path to demonstrate the reason as to why specific code or standards are applicable or not.

- 7) Equipment description: A list of every component and sub-assembly (fittings, hoses, quick disconnects, gauges, site glass, gaskets, valves, pumps, vessels, containers, switches, etc.) of the system or equipment shall include the manufacturer, equipment data sheets, model number, material, and solvent compatibility.
 - 8) A general flow schematic or general process flow diagram of the process. Post-processing or winterization may be included in this diagram. All primary components of the process equipment shall be identified and match the equipment list required in “sub-section” 7 above. Operating temperatures, pressures, and solvent state of matter shall be identified in each primary step or component. A piping and instrumentation diagram (PID or P&ID) shall also be provided.
 - 9) Analysis of the vessel(s) if pressurized beyond standard atmospheric pressure. Analysis shall include purchased and fabricated components.
 - 10) Structural analysis for the frame system supporting the equipment.
 - 11) Process safety analysis of the extraction system from the introduction of raw product to the end of the extraction process.
 - 12) Comprehensive process hazard analysis considering failure modes and points of failure throughout the process. The process hazard analysis shall include a review of emergency procedure information provided by the manufacturer of the equipment or process and not that of the facility, building or room.
 - 13) Review of the assembly instructions, operational and maintenance manuals provided by the manufacturer.
 - 14) List of references used in the analysis.
- e. Site Inspection: Prior to operation of the extraction equipment, where required by the fire code official, the engineer of record or approved professional shall:

- 1) Inspect the site of the extraction process once equipment has been installed for compliance with the technical report and the building analysis.
- 2) Provide a report of findings and observations of the site inspection to the fire code official prior to the approval of the extraction process.
- 3) Ensure the field inspection report includes the serial number of the equipment used in the process.
- 4) Confirm the equipment installed is the same model and type of equipment identified in the technical report.

12. Safety Systems:

- a. Emergency Shutoff: Extraction processes utilizing gaseous hydro-carbon based solvents shall be provided with emergency shutoff systems in accordance with Section 5803.1.3 of the CFC.
- b. Emergency Power: Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency or stand power in accordance with Chapter 50 and Chapter 60 of the CFC.
- c. Written Maintenance Plan: All safety systems shall have a corresponding written maintenance plan with a monthly log, and a copy shall be made available to the fire code official, upon request.
- d. Performance Demonstration Test: Upon initial installation and at frequencies determined by the AHJ, all safety systems, including detection, alarms, emergency power, negative pressure systems, and interlocks, shall demonstrate a performance test for the fire code official.
- e. Performance Failure Test: Upon initial installation and at frequencies determined by the AHJ, all safety systems, including detection, alarms, emergency power, negative pressure systems, and interlocks, shall demonstrate performance upon system failure.
- f. Alarms: All alarms connected to an approved safety system shall be distinctive from any other safety system alarm on site and shall have a corresponding sign at each alarm device clearly identifying the alarm's purpose.

- g. Gas Detection Systems: All gas detection systems shall comply with “subsection 13” of this regulation.
 - h. Inspection, Testing, and Maintenance: The building owner shall be responsible for maintaining the life safety systems and keeping them in an operable condition at all times. Inspection, testing, and maintenance shall be conducted by qualified service personnel only and done at intervals called out by the device listing.
 - i. Annual Calibration and Performance Test: At a minimum, all life safety systems, including detection, alarms, interlocks, negative pressure systems and emergency power, shall have an annual calibration, performance and certification test by a qualified individual acceptable to the fire code official. A written report shall be generated and provided to the fire code official showing all systems are free of any deficiencies or clearly identify any deficiencies noted. Any deficiencies identified shall be immediately serviced so the life safety system shall function as intended. In the event that deficiencies are identified, after they have been serviced and resolved, an additional calibration and performance inspection test shall be performed by a qualified individual, and a written report shall be provided to the fire code official stating that the system exists without deficiencies.
 - j. All safety systems, including ventilation systems, detection systems, alarms, and negative pressure systems shall have their supervising circuit breakers clearly marked and identified.
13. Gas Detection Systems: Gas detection systems required by the fire code shall comply with the following:
- a. Permits: Permits shall be required.
 - b. Construction Documents: Documentation of the gas detection system design and equipment to be used shall be adequate to demonstrate compliance with the requirements of this regulation shall be provided with the application for permit.
 - c. System Design Flammable Gas Detection Systems: Flammable gas detection systems shall be listed or approved and shall be calibrated to the types of fuels or gases used for the extraction process. The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the lower flammable limit (LFL).

- d. Equipment: Gas detection system equipment shall be designed for use with the gases being detected and shall be installed in accordance with manufacturer's instructions.
 - 1) Gas detection system control units: Gas detection system control units shall be listed and labeled in accordance with UL 864 or UL 2017.
 - 2) Gas detectors: Gas detectors shall be listed and labeled in accordance with UL 2075 for use with the gases and vapors being detected.
- e. Power Connections: Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an un-switched receptacle using an approved restraining means that secures the plug to the receptacle.
- f. Emergency and Standby Power: Where standby or emergency power is not required by the CFC; standby or emergency power shall be provided, or the gas detection system shall initiate a trouble signal at an approved location, if the power supply is interrupted.
- g. Sensor Locations: Where a specific location for sensors is not specified elsewhere by the CFC, sensors shall be installed in approved locations where leaking gases are expected to accumulate.
- h. Gas Sampling: Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows:
 - 1) For Hazardous Production Materials (HPM) gases, sample analysis shall be performed at intervals not exceeding 30 minutes.
 - 2) For toxic gases that are not HPM, sample analysis shall be performed at intervals not exceeding 5 minutes in accordance with Section 6004.2.2.7 of the CFC.
 - 3) Where a less frequent or delayed sampling interval is approved.
 - 4) For extraction processes utilizing flammable gases as solvents, a continuous gas detection system shall be provided. The gas detection threshold shall be no greater than 25 percent of the LFL of the materials.

i. System Activation: A gas detection alarm shall be initiated where any sensor detects a concentration of gas exceeding the following thresholds:

- 1) For flammable gases, a gas concentration exceeding 25 percent of the LFL.
- 2) For non-flammable gases, a gas concentration exceeding the threshold specified by the CFC requiring a gas detection system.

3) System operation:

Activation of the gas detection system shall result in all of the following:

- a) Initiation of distinct audible and visual alarm signals in the extraction room.
- b) Deactivation of all heating systems located in the extraction room.
- c) Activation of the mechanical ventilation system, where the system is interlocked with gas detection.

Upon activation of a gas detection alarm, alarm signals, or other required responses shall be as specified by the CFC requiring a gas detection system. Audible and visible alarm signals associated with a gas detection alarm **shall be distinctive from fire alarm and carbon monoxide alarm signals.**

j. Failure of the Gas Detection System: Failure of the gas detection system shall result in the deactivation of the heating system, activation of the mechanical ventilation system where the system is interlocked with the gas detection system, and cause a trouble signal to sound in an approved location.

k. Failure of the Ventilation System: Failure of the ventilation system covering the extraction area shall result in the deactivation of the extraction process, including the heating system, and cause a trouble signal to sound in an approved location.

l. Interlocks: All electrical components within the extraction room shall be interlocked with the gas detection system. Activation of

the gas detection system shall disable all light switches and electrical outlets.

- m. Emergency Shut-off: Extraction process utilizing gaseous hydro-carbon based solvents shall be provided with emergency shut-off systems in accordance with Sections 5803.1.3 of the CFC.
- n. Signage: Signs shall be provided adjacent to gas detection system alarm signaling devices that advise occupants of the nature of the signals and actions to take in response to the signal.
- o. Fire Alarm System Connections: Gas sensors and gas detection systems shall not be connected to fire alarm systems unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions.
- p. Inspection, Testing and Sensor Calibration: Inspection and testing of gas detection systems shall be conducted not less than annually. Sensor calibration shall be confirmed at the time of sensor installation and calibration shall be performed at the frequency specified by the sensor manufacturer. A written record of the calibration shall be provided to the fire code official upon request.

The information above states general fire code permit requirements. Additional specific requirements may be set by the fire code official after reviewing the application for a permit and subsequent field inspection. Application for a permit required by the fire code should include enough detailed information, such as a statement, plot plan, drawings, photos, lists, technical specifications, and applicable approval from other agencies, to show compliance with the fire code.