Clark County Medical Marijuana Facilities

Town Hall Meeting

October 8, 2015
Presented by:
Commissioner Steve Sisolak

along with:

- Department of Business License
- Department of Comprehensive Planning
- Department of Building & Fire Prevention
Clark County
Medical Marijuana Facilities
Town Hall Meeting Timeline & Agenda

Welcome – Commissioner Steve Sisolak

Introduction of Sr. Staff – Ron Lynn, Director/Building & Fire Official

Nancy Amundsen, Director of Clark Co. Comprehensive Planning
Sam Palmer, Assistant Director CCDB&FP
Allison Gigante, Assistant Manager of Clark Co. Business License
Doa Meade, LV Valley Water District Engineering Services Manager

Introduction of Presenters – Ron Lynn

Brett Miller, Architect with Miller Design Works
Kevin McOsker, Clark Co. Plans Exam Manager
Robert Williams, Clark Co. Chemical Engineer

Housekeeping Issues – Ron Lynn

Cell phones silenced
Bathroom locations (no break – leave when necessary)
Questions held to the end
Exiting

Presentation:

Brett Miller – (30 min)
Kevin McOsker – (15 min)
Robert Williams – (15 min)

Q & A Session – (45 min)
CLARK COUNTY DEPARTMENT OF BUILDING & FIRE PREVENTION

Town Hall Presentation - October 8, 2015

Brett Miller, President
Miller Designworks, Inc.
Medical Marijuana Establishments

CLARK COUNTY DEPARTMENT OF BUILDING & FIRE PREVENTION
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Kevin T. McOsker, P.E., C.B.O.
Medical Marijuana Establishments

- **Medical Marijuana Facilities:**
  - Given the current market and requirement at the State most have been remodel permits:
    - Challenges dealing with current infrastructure of the Building
    - Good to Poor to non-existing construction documents (one dated back to 70’s era warehouse).
    - Most required Occupancy Changes
    - Most required consideration of higher occupant loads
    - Second Floor Live Loads
    - Not enough electrical services to support new business
  - Would not preclude design and construction of a completely new building
  - MME Building may have one or more use/occupancy, or all uses in a single building
  - Facilities can be designed using separated or non-separated uses.
  - Building and Fire Codes do not have Marijuana provisions, however, regulation that should be applied by similar to regulations in similar industries/uses.
Medical Marijuana Establishments

- **Dispensaries: Specific uses/operations:**
  - Sale of Marijuana
    - Marijuana has several varieties (brands) with different odor/flavor/taste/effects
  - Sale of Marijuana infused products
    - Edible products (cookies, brownies, chocolates, drinks)
    - Topical products (lotions, oils, bath salts, etc...)
  - Sale of Marijuana Paraphernalia
    - Accessories, devices or other equipment that is necessary or useful for a person to engage in the medical use of marijuana (NRS 453A.125)

- **Dispensaries:**
  - Sale of Products:
    - Group M (Mercantile Occupancy Group)
    - Section 309.1 ...for the display and sale of merchandise and involves stocks of goods... includes by not limited to the following: Drug Stores.
Medical Marijuana Establishments

- **Cultivation**
  - Facilities intended to grow plants to maturity
  - Plants are grown in different rooms w/ physical separation
    - Plants are “tricked” into believing they are seeing different seasons
    - Light timing and intensity changes based on growth cycle
  - General consensus: F-1 Occupancies
    - Phoenix, Denver, Las Vegas
  - Denver specifies/allows a OLF of 1:300 in the “growing” rooms
  - (Agriculture buildings)
    - Manufacturing Areas 1:100
    - Existing Storage 1:500
  - Wide Range of Complexity/Manual Labor
    - Sophisticated watering/lighting systems
    - Manual watering and lighting
Medical Marijuana Establishments

- **Cultivation:**
  - Typically Carbon Dioxide (CO₂) Enrichment
    - Enhances growth and leads to a faster and higher plant yield
    - The Fire Code has permitting requirements for CO₂
    - Ideal CO₂ enrichment is 1200 ppm to 2000 ppm
      - 8 hour exposure limit is 5000 ppm
    - Compressed/Liquefied CO₂ is preferred
      - Large bulk tank remotely located in the building distributed throughout.
      - Small tanks in each room
    - CO₂ generation from fuel-fired appliance is highly regulated
      - We have been asking for a specific listed appliance for this application
      - Carbon Monoxide is a by-product of fuel-fired appliance
Medical Marijuana Establishments

- Cultivation:
  - The Group U Question?
    - Can cultivation be in a U occupancy?
    - Agricultural Buildings/Greenhouses
    - Strictly, yes, but limited to other uses/applications
    - Limited in area, and possibly applying unlimited area provisions
    - CCDB&FP policy requires MME cultivation in F-1 occupancies.
      - Occupant loads/hazards are most like a F-1 occupancy.
Medical Marijuana Establishments

- **Drying Rooms:**
  - Plants are harvested and material is dried.
  - Generally considered a portion of the F-1 occupancy.
  - Low occupancy, but dry plants present a fire hazard.
  - Humidity is controlled.

- **Processing Rooms:**
  - Staff manually removes the “usable” plant product.
    - Leafs, stems and buds are separated
  - Higher occupant loads.
  - May contain security measures to control inventory.
Medical Marijuana Establishments

- Extraction:
  - Typically use either CO$_2$, Butane, or Alcohol Extraction
    - Other less hazardous methods are possible, more labor/less effective.
    - Extraction is used in other industries (De-caffeinated coffee and perfume processing)

  - Extraction Process removes the oils from the plant to be use in a marijuana products

  - CO$_2$ extraction removes the terpenes (flavor and taste)
    - Preferred for edible products (marijuana taste is removed)

  - Butane extraction favored for the smoke-able “hash” products.

  - Alcohol extraction: marijuana is soaked in alcohol then the liquid is boiled off leaving the oils behind.
    - Hazardous exhaust hood should be required in these applications
Medical Marijuana Establishments

- Extraction:
  - Closed system using potentially hazardous/flammable products
  - High Pressure systems
  - Unlisted/Field Listed components
  - The extraction process recycles the CO₂ or Butane
  - Typically volume of materials does not require Group H occupancy classifications.
Medical Marijuana Establishments

- Commercial Kitchens:
  - MME produce edible products for customers
  - Group F occupancies include Food Processing Commercial Kitchens
    - Processing of edible products
    - Baking and cooking of products
  - No specific hazards should be present in this use.
Medical Marijuana Establishments

- Laboratories:
  - Laboratories are defined in 304.1 as Group B occupancies.
  - Labs are used both on-site and off-site.
    - On-site Labs: internal QA and QC or product development.
  - NRS 453A.368 requires Independent Testing Labs:
    - Concentration of THC and Cannabinoids.
    - Organic/Non-organic nature.
    - Presence of molds and fungus.
    - Presence of fertilizers and other nutrients.
  - No specific hazards should be present in this use.
Medical Marijuana Establishments

- **Storage:**
  - Moderate-hazard Storage
    - Group S-1 Occupancy Classification
    - OLF well defined.
- **Offices**
  - All business applications include some offices
    - Part of the occupancy, incidental use; or if necessary, a B-Occupancy classification.
- **No specific hazards should be present in this use.**

- **Access/Security Control:**
  - Building Code addresses egress requirements from all spaces.
  - Occupant Loads and Egress should be addressed as all other occupancies.
Medical Marijuana Establishments

- **Electrical Issues:**
  - Cultivation “grow” rooms need large amounts of electrical energy
    - High intensity lights uses for growth/artificial sun light
    - Grow lamps can operate at 1000 watts each
  - Massive Service additions will be required
    - Number of service to building (NEC 230.2)
  - These should be “engineered” applications in lieu of contactor submittals
    - CCDB&FP limits contractor designs to 800 amps (policy)
  - Use of flammable gases (butane)
    - Wiring methods effected (NEC Article 500)
Medical Marijuana Establishments

Electrical Issues:

- Grow room and vegetation requires water
  - Wet locations/GFCI protection for receptacles (NEC 210.8)
- IECC limit lighting watt/sf: not reasonable for “grow” rooms
  - Rest of the building reasonable for IECC compliance
- Security Systems/Alarms
  - Typically low voltage.
- Other applications, besides grow rooms, code addresses these very well (M, B, S, occupancies)
Medical Marijuana Establishments

- Ventilation/Mechanical Issues:
  - Alternate Process to eliminate requirement for mechanical ventilation requirements.
    - Watch for CO₂ enrichment, still need system to remove/exhaust CO₂ in areas where enrichment is being used.
    - Inadvertent/Accidental or leak of CO₂ enrichment in grow rooms.
    - Tie in CO₂ sensor/alarm into exhaust system.
    - Evacuate CO₂ when a specific limit is reached.
    - Warning Signage should be required
  - OSHA limits:
    - 8 hour PEL: 5000 ppm
    - 40,000 ppm immediate danger to life and health
  - Optimum CO₂ enrichment is 1200 ppm - 2000 ppm for plant growth
Haz-Mat Permitting in MME Facilities

CLARK COUNTY DEPARTMENT OF BUILDING & FIRE PREVENTION
Town Hall Presentation - October 8, 2015
Robert G. Williams - Chemical Engineer
Operations Requiring Permits

- CO2 Enrichment of Grow House Atmosphere
- Hydrocarbon Extraction for Hash Oil Production
- Supercritical CO2 Extraction
CO2 Enrichment

- CO2 Regulatory Limits
  - 5000 ppm - OSHA Permissible Exposure Limit
  - 30,000 ppm - OSHA 15 minute Ceiling Limit
  - 40,000 ppm - OSHA Immediately Dangerous to Life and Health
CO2 Enrichment

- Normal Atmospheric CO2 concentration: 400 ppm
- Stuffy office in afternoon: 1000 ppm
- Frequent Desired CO2 concentration in Grow Houses: 1500 - 1700 ppm
CO2 Enrichment

Methods of CO2 Delivery

- Cryogenic Liquid CO2
- High Pressure Compressed Gaseous CO2
CO2 Enrichment

- Cryogenic Liquid CO₂
- Large Insulated Tank - often outdoors
- Internal or External vaporizer
- *Gaseous* CO₂ delivered to target rooms

- Advantage - Lot of CO₂ in relatively small space
- Infrequent deliveries
- Remote fill
CO2 Enrichment

- Gaseous CO2
- Smaller quantities per container
- Potentially less expensive for smaller facilities
- Frequent change- out of containers
CO2 Enrichment

CO2 “Generation”

- Thought to be less expensive method of increasing CO2

- Generators are classified under Building Code as Unvented Natural Gas Heaters

- Building Code requires Unvented Natural Gas Heaters to be Listed
CO2 Enrichment

- Disadvantage - multiple other gases in exhaust beside CO2
  - Unburned Hydrocarbons
  - Nitrous Oxides
  - Carbon Monoxide
CO2 Enrichment

- Monitoring
- All methods of CO2 delivery require at least one CO2 Monitor in each Target Room
- Alarm level for monitor set at 5000 ppm (OSHA PEL)
- Alarm is local alarm only - not required to be connected to building fire alarm.
CO2 Enrichment

- At Alarm Levels Monitors must:
  - Activate audible and visual alarms
  - Shut off supply of CO2 to room or building
  - Activate exhaust fans for room or building
    - Exhaust Fans must have capacity to remove 1 cfm/ft²
CO2 Enrichment

- The solution is Jet Engines
  - Generate power
  - Supply CO2
Hydrocarbon Extraction

- Produces Hash Oil
- Purpose is to concentrate THC
Hydrocarbon Extraction

- Multiple Solvents can be used:
  - Ethyl alcohol
  - Methyl Alcohol
  - Propane
  - Butane
  - Pentane
  - Hexane

Different solvents have varying efficiencies on extracting compounds from plant material.
Hydrocarbon Extraction

- Ideal solvent will efficiently strip THC and other compounds from plant material
- Will easily evaporate near room temperature and leave little residue
- All solvents used are very flammable
Hydrocarbon Extraction

- Specialized Extractors made by a few manufactures specifically for this industry.

- Normally very well constructed

- None are listed, making permitting by Fire Code difficult
Hydrocarbon Extraction

- Alternative to listing is peer review by Nevada Licensed Engineer
- Most companies have an acceptable peer report that has been used in Colorado or Washington, however cannot be accepted in Nevada due to lack of Nevada Licensed Engineer Stamp
- At least one company now has a Nevada licensed engineer and we can accept peer reviewed reports signed and stamped by him.
Hydrocarbon Extraction

- Extraction Methodology:
- Liquid solvent mixed with plant material
- Solvent extracts THC and other cannabinoïds
- Solvent/Extractant liquid separated from plant material
- Solvent/Extractant liquid warmed to evaporate solvent and leave Extractant behind - Most Dangerous Step for Fire Hazard
Hydrocarbon Extraction

- Solvent evaporation can be done at lower temperature if done under vacuum
- Evaporated solvent is condensed then recycled
- Stripped plant material is vacuum dried to remove as much residue solvent as possible prior to disposal
Hydrocarbon Extraction

- Extraction Machines have one step when extraction chamber is opened to remove stripped plant material when it is likely to have a small hydrocarbon vapor release.
- Because of this step, a flammable vapor area, similar to that found in a paint spray booth, is formed.
Hydrocarbon Extraction

- Flammable vapor areas are best mitigated by copious ventilation to keep concentrations below the flammable threshold.
- Clark County Fire Prevention Bureau guidelines for ventilation of dedicated extraction room:
Hydrocarbon Extraction

- Whenever the flammable solvents are in the extraction room, the room’s exhaust fans are to be run at a rate not less than 1 cfm/ft²
- Whenever the solvent extraction process is underway, the exhaust fans shall be run at a rate to generate a cross flow velocity of at least 100 linear feet/minute
- Identical requirement to Paint Spray Booths
Hydrocarbon Extraction

- Electrical Requirements
- Per the Electrical Code, areas that could have, but would not normally have, a flammable vapor concentration are classified as Class I, Division II
- Electrical circuits in extraction room will be Class I, Div II
Hydrocarbon Extraction

- Monitoring:
- All extraction rooms will be equipped with a flammable vapor monitor that will detect flammable vapors at less than 25% of the Lower Flammability Limit (LFL)
- If Flammable Vapors reach 25% of the LFL the monitor will shunt the electrical power in the room except for the exhaust fans.
Hydrocarbon Extraction

- Extraction rooms typically have electrical powered equipment to facilitate the extraction process and removing solvent residue from product and stripped plant material.
- This equipment is not normally listed or certified as explosion-proof.
- Shunting the electricity at 25% LEL allows this equipment to be used safely in the extraction room.
CO2 Extraction

- Same requirements as Grow houses
- CO2 monitors
- At 5000 ppm
  - Audible and visual alarms
  - CO2 shut off
  - Room exhaust at 1 cfm/ft2
Testing Monitors

Because the CO2 and LEL monitors have such an important role in safe operation of the facilities, it is very important that they be inspected and tested to verify they provide the level of performance as designed.
Testing Monitors

- Per section 5003.2.9 of the 2012 IFC, Initially and Annually the CO2 monitors must be tested.
- When challenged with a 5000 ppm CO2 test gas, each monitor must:
  - Activate audible and visual alarms
  - Shut off the supply of CO2 to either to the room housing the monitor or to the entire building
  - Activate the Exhaust fans at 1 cfm/ft2
Testing Monitors

- Initially and Annually the LEL meters must be tested.
- When challenged with a 25% flammable gas, each monitor must shunt the electricity to the room except for the exhaust fans.
Clark County Grow Houses

- 52 licenses granted by County Commission
- Presently 4 permitted
- CCFPB typically meets with at least 2 potential grow houses per week
Clark County Production Facility

- Presently 1 permitted to conduct Hydrocarbon Extraction
Questions & Answers
Thank you for Participating

Questions or Comments may be E-mailed to Cathy Altstatt, catherene.altstatt@clarkcountynv.gov